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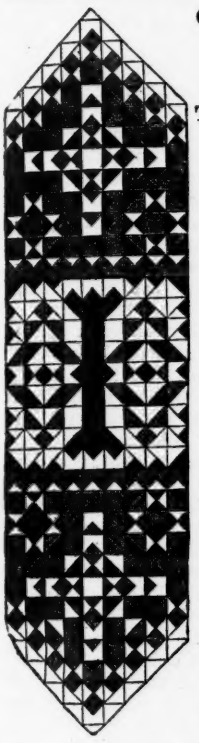

## *On Taste: Philologically and in Brickwork.*

IT seems to be a question quite worth discussing whence it comes that the special sensibility by which we appreciate degrees of excellence and diversities of excellence in the achievements of art should be under obligation for a metaphorical expression to the sense of taste of all others,—not to one of the nobler senses, as we may fairly call them, to sight or hearing, or even to smell. Our modern languages are all in accord, and employ the same word for the enjoyment of fine art or polite literature as for the commonplace functions of eating and drinking. *Geschmack* in German, *gusto* and *goût* in the Romance languages, correspond to the English "taste." The English term, on the whole, while quite as expressive, is more agreeably and appropriately refined, as it is a word transferred by analogy from its originally exclusive signification of feeling or examination by the sense of touch. This is a process which is susceptible of the greatest delicacy and naturally accompanies inevitably more or less examination by the sense of taste, and so was promoted the transference of the term. *Gusto* and *goût* are, of course, only forms of one word; but the occurrence of the other parallels argues that the metaphor is so natural that another question arises,—how it happens that resort to it does not appear to have occurred to the ancients. The Latin aphorism which expresses the futility of argumentation about matters of taste must be of Mediæval Latinity: "*De gustibus non est disputandum.*" The nearest approach to Ciceronian justification for the phrase that a no doubt somewhat cursory search provides is in the oration in favour of the poet Archias, in close proximity to that celebrated sentence on the excellence of polite literature which it somewhat strains self-control to abstain from quoting. "Even," pursues the orator, "if we are incompetent either to master such accomplishments ourselves, or to have any taste for them (*neque sensu nostro gustare*), we are bound to admire them when we may recognise them as possessed by others." But the taste here spoken of is direct appreciative relish, not fine discrimination. The Romans, practical people as they were, preferred to apply metaphorical taste to the distinction of business-like matters, and could not spare its name, *Sapientia*,—the appreciation of the sapid, literally,—for anything less than the very highest form of intelligence and discretion they cared to cultivate. Otherwise the nearest analogy of their phraseology to the uses of the moderns pertains to the sense of smell, which is most nearly allied to that of taste, is constantly in exercise with it conjointly, and often seems to blend with it indistinguishably. A man of clear nostril,—*emunctæ naris*,—might be appealed to for judgment either of wit or of a statue. Doubtless there are notices in abundance to show that Roman society was familiar, not only with collectors of works of art for ostentation, but with the connoisseurs who pique themselves on their knowledge of schools and styles. The slave of Horace, in words that Horace puts into his mouth, complains that he cannot stop to look at a black and red scrawl of a fight of gladiators without being called to account as a dawdler, while as to his master, he can stand before a picture of Pausias as absorbed as if he had lost his wits, and has, forsooth, the repute of a keen and subtle judge of an old master,—

"At ipse
Subtilis veterum judex et callidus audis."

Cicero, indeed, can speak of a passion for art as contemptuously as the slave Davus,—or, indeed, more so,—in something like an exaggeration of his very terms. He declares it to be beneath the dignity of a Roman to stand as if he were stupified before a painting by Echion or some statue by Polycletus: "as in a family those who sweep, wipe, sprinkle, and so forth, are not the superior servants in the establishment; so, in a state, those who give themselves up to excessive interest in things of this kind, are almost in a position of lowest servitude,—servants of fellow-servants."

We shall not easily find enunciations in Greek, at least before the age of Plutarch, that we can set against this; but neither in Greek do we find a parallel to our modern metaphorical employment of taste, nor very easily, as it seems, any expression equivalent to it in meaning. Words expressive of a love and lover of the beautiful offer themselves at once, but not so a name for that discriminative faculty, assuredly as admirably exercised by the Greeks as it must have been constantly put in requisition among them, which, for very sufficient reasons, that it may begin to be thought we are in some danger of forgetting to inquire about, is known in modern times as Taste.

The suggestive analogies are not very far to seek; differences of tastes, positive and metaphorical, are alike exceptionally diversified; likes and dislikes of different people in respect of the arts or of manners are most variable, contradictory, and, at the same time, decided and positive, just as are the likes and dislikes of their palates; and both classes of appreciation appear to agree in this, that the causes and justifications of enjoyment and repugnance elude demonstration; satisfaction and dissatisfaction in either case appear to depend as much on the idiosyncrasy of the stimulated as on the quality of the stimulant; and no evidence and no arguments are available to prove, even to the indifferent, that sensations of sweetness and sentiments of beauty are produced in those who are conscious of them, by things which are not justly to be called sweet and beautiful. It is a universal experience, indeed, for the individual to be too conscious that he cannot explain to himself the reason of his most decided preferences, either in poetry or vintages, for him to be encouraged to urge them authoritatively on another; but, still we are not driven to admit in all cases that these are as utterly unaccountable in their nature, as Shylock declares to be the series of strange repugnances and antipathies that he enumerates, for which, in his words, "there is no firm reason to be rendered." To give up an essential distinction between beauty and ugliness in art would be a preliminary to adopting Shylock's theory as to the criteria of right and wrong in morals. Only to this extent, and it is not unimportant, we may assent to him, that in art as in morals, it will often occur that the first warning of a sound decisive judgment is given by simple sympathy. Immediate distaste is often not to be wisely neglected as a hint of dangerous unwholesomeness, nor will a critic wisely neglect a sudden thrill of unexplained gratification before a work of art. Harmonies are recognised by the musical ear, which very unmusical students indeed may be the agents of tracing to a mathematically accurate dependence of vibrations. If the mathematician happens also to have a musical ear, it may be well that his useful scientific investigation may have its direction decided by casual appreciation of an unusual, however slight, enhancement or disturbance of harmony. The more fleeting these delicate yet decisive impressions are, the more desirable is it to arrest them, and, if possible, "pluck out the heart of their mystery." It is in the pursuit of such hints that the students in all the arts gain refinement for their taste and definition for their knowledge. Certainly this is not least the case with the architectural student or connoisseur, who is bound so often to ask himself the question how far he can identify the principle by which a composition produces in him a pleasing sense of harmoniousness; and quite as frequently, it may be, is at a loss to account for a certain sense of discord which mars this harmoniousness, the cause of it being so obscure that it is probably lurking in a detail,—the "fly in the ointment of the apothecary," the midge in the test-tube of the analyst, which makes a serious difference indeed, and vitiates his most laborious process. Nay, it is sometimes only by a deliberate concentration of attention that he becomes definitely aware that

he is not fully pleased, detects himself in slurring over dissatisfaction too carelessly, as if willing to get rid of it. Let us endeavour, after presuming on indulgence in this discursive lucubration, to proceed to show that its discursiveness is by no means irrelevant by inquiring whether some help may not be obtainable to precision in taste by examination of details of architectural treatment that are of all but universal application, and yet not often made the subject of distinct analytical study.

In our previous exposition (p. 571, *ante*) of the arrangements which, in various ways, give distinct expression to central unity in architecture, we omitted, or rather reserved, consideration of the treatment of the angle,—of the extreme termination of a front at its return upon the flank of the structure; but this is, or may be made, very importantly contributory to the expressive unity which was in question; and it is here that very frequently there lurks a certain unsuspected liability to mismanagement which damages effect very seriously indeed.

When a composition is not dependent as such upon very predominant central features, the angle finish has an importance only second to that of the cornice; an explicit termination has always a certain natural effectiveness, and when this is emphasised, as, for instance, in the bold roll mouldings of an Egyptian pylon, it completes a decisive border or frame. In modern architecture the favourite resource has been the employment of quoins more or less judiciously designed or disposed; the artifice is too obvious not to have been abused with a facility that invited and even justified the satire of Pope:—

> "Then stick four slices of pilaster on't,
> Which, laced with bits of rustic, makes a front."

On this topic there is more to be said; but it is necessary to notice first that the first attention is due to the independent responsibility of the angle and to what this seems to imply and demand.

The angle is exceptionally exposed to injurious impact; it lies "in the very force and road of casualty," not like the plain face of the wall protected equally on either side; if there is no visible indication that it is fortified sufficiently or at all to provide against accidents, there will be a weakening of expressiveness which will reduce effect, although the spectator may have no suspicion of the cause of unsatisfactoriness.

Upon the angle, again, is cast an especial structural responsibility; the return of a wall involves in the change of direction a changed arrangement of materials, and an assurance is appropriate, and even required, of accuracy in transition and adjustment. We come here upon what is equivalent to a seam in other kinds of work, or, let us say, to an articulation in the human frame, which it tests the skill of painter or sculptor to express at once with the requisite union of delicacy and force. It would seem that the angle of a building has, structurally, even greater claim to characteristic expression than the keystone of an arch, which only conduces to stability equally with any lateral voussoir of the same size, and is only indebted for its distinction to the singularity of its position.

Confining ourselves to simple brickwork, in the first instance, what do we find to be the circumstances of the case? These are familiar enough. When the usual Flemish bond is in question, a header is laid precisely over the bisecting line of a stretcher, and, covering as much as half its length, leaves a quarter free at either end to be covered by adjacent stretchers; it is a necessary consequence that, when the end of the wall has to be completed, and we finish one course with a header, the stretcher which has to cover it on the course above will only range flush by being shortened by a quarter. Again, on the return the header will present itself as a stretcher, and if the same system of bond is to be preserved, the header above it will leave a vacancy, which has to be filled by another header shortened to half-breadth.

This diminished brick is, of course, that known as the closer, but is judiciously so far removed to the interior position, the entire header being assigned to the angle where it shows as a stretcher on the return, and so the series recommences.

Now here we are committed to what is in principle a disastrous result; so far as reduction of mass of materials carries an implication of reduction of strength, these interpolated closers tend to give an expression of weakness precisely at the point where we have a right to desiderate an enhancement and confirmation of coherence and strength. Some may be disposed to inquire doubtingly, But does this arrangement,—granting it to be unfortunate in the abstract,—really tell upon our sensibilities? Does it in any degree effectively disturb complacency, which is otherwise at ease? Would it ever annoy us unless our attention were somewhat officiously drawn to it? The reply is that when it is once pointed out, the annoyance will be readily recognised, and thereafter in a walk through the streets and squares which contain so many admirable examples of brickwork, the dissatisfaction will be found to be not trifling; and if this be so, we may be assured that the cause of it was by no means inoperative in moderating admiration previously, although it was not intelligibly defined and recognised. This is a precise illustration of the cases in which taste is conscious of a check without knowing precisely why,—a check by no means unimportant although so far from rousing repugnance or provoking a distinct protest that it may be much if it even cools enthusiasm so sensibly as to excite to inquiry for a cause. This is one of the contingencies of properly æsthetic taste of which an illustration has been borrowed before from experiences of the wine-tasters. When Sancho Panza's father drank a trial glass from a hogshead of old wine he pronounced it excellent but for a certain faint leathery flavour; his uncle was equally enthusiastic, but with the reservation that he detected a scarcely perceptible but still perceptible smatch of iron. These were altogether phenomenal connoisseurs; one less exceptionally gifted might have shaken his head and declined a second glass, though quite unable to guess what intrusive flavour caused such unusual disinclination until the peccant little key with a leather label was found at the bottom of the tun.

It does not seem extravagant to suggest that when beauty of brickwork and general effect is studiously consulted it would be well that this counter-sense should be avoided, and assistance given to emphasising the angle appropriately by uniting the closer and header by the angle in a single brick manufactured for the place and purpose. Such bricks would be employed in every course, as the angle brick which, showing as stretcher on the front, presents itself as header on the side, and *vice versâ*. It is open to us to attempt an alleviation of this difficulty, if not to cancel it entirely, by some other arrangement; we may employ the closer to eke out the shortcoming of a stretcher, but do best to insert the closer between a stretcher at the angle and the interior adjacent header, and thus remove it somewhat further from the corner; but here we incur another inconvenience: all the joints will be covered accurately enough, but it will be observed that the stretchers now only bond one joint instead of two, an advantage which it is not well to forfeit, and an independence seems to be given to headers and stretchers in their vertical pile which is by no means conducive to an expression either of coherence or repose. The same observation applies to an arrangement which is only inserted because it has been seen in good work employed in piers between windows, without any discoverable need or advantage whatever.

Somewhat more promising is the expedient of finishing alternate courses with a closer between two stretchers, the closer will then be equally removed from detrimental proximity to the angle, and the courses will run on throughout with all the advantage of compound bond. This, in fact, is an arrangement which appears to have most in its favour apart from the adoption of the special brick uniting in itself both header and closer, and giving a maximum expression so far of angular solidity.

This device, however, is still insufficient and incompetent to give the full expression of confirmed solidity which the position requires; and, indeed, there is ever the inherent defect in uniform brickwork, that whatever may be the beauty of the workmanship, it fails to give intimation of the thickness of an adequately substantial and solid wall. Still, there are opportunities for the expression of this if duly taken advantage of. It is above all at the angle that these occur, and then in a subordinate degree at the reveals of windows and other openings. In perfectly uniform work there is no hint of the thickness of the wall exceeding the length of a single brick, and this inference tells upon us whether we represent it to our consciousness definitely or not, even more certainly than Sancho's friends had their liking for the wine affected while still unable to formulate their objection,—to isolate the vitiating smatch with the discriminating palate of his father or his uncle. We confine ourselves now to the resources which brickwork itself supplies, and of these the most important is the employment at the angles of the wall of a brick of different colour and different texture. Before the manner of application is considered, there is even a previous question as to the colours that may be associated. Time will not be ill-spent in perambulating the London streets of the latest Stuart and earlier Hanoverian periods, with eyes to observe, and compare a great variety of such combinations of colour in fronts yet unmodernised by stucco or rebuilding. Such a street as Grosvenor-street exhibits specimens as instructive as any case of minerals or butterflies in a museum. London smoke,—which under William and Mary was already so abundant and deleterious as to drive John Locke in distress out of its reach,—has besmirched the original brightness of many an effective and happy combination; but still they assert themselves as not less than architectural good taste ruined. Their general characteristic is an escape from monotony, whether uniform ruddy,—somewhat over-familiar to us now,—or uniform dun, and avoidance as skilful and scrupulous at the same time of rawness and crudity, of harsh transitions, of piebald alternations, of screaming contrasts. In fact, for the most part, while the associated colours, and we may say textures too, are sufficiently different to enliven by contrast, they are sufficiently similar to blend.

The employment of a different brick at the angle of the wall is in itself a recognition and a visible enunciation of the fact that the position demands differential treatment, and such treatment, if honest, must regard, must seem to be reminiscent as suggestive of the particular thickness of the construction. The extent to which the difference should spread and be displayed is liable to be affected by the nearness of a window; it would seem to be appropriately such as to represent a consistent thickness of the wall, and something more, but not approach so near to an opening as to risk the impression that all is solid up to its edge. The different brick may be employed with consistent effect, again, at the edges of piers between windows; there is the same reason for strengthened angles and edges where the wall is pierced for an aperture as at the outside angle of the wall; but a discord will infallibly ensue if the differential brickwork at the angle has not assigned to it a decisive predominance over that which borders a window. We may observe that our ancestors of the wigs and knee-buckles, patch and powder days, do not always satisfy us, and evidently had honest difficulty in pleasing themselves with a mode of uniting the differential brickwork of the upright architraves with the relieving arches in the same materials above their windows; the problem is probably not insoluble in several different ways, and may be stated here thus simply, and left to stimulate inventive imagination.

The experiment may sometimes be observed of giving distinct emphasis to the angle of a building by setting the bricks with a projection beyond the plane face and working them into the semblance of quoins alternately longer and shorter. We leave the subject of quoins apart at present, and as regards this mimicry of them, pass it over also at present, with the remark that it can but palpably falsify the responsibility which it ostentatiously undertakes of strengthening bonded construction. The vertical lines of the seeming quoins are apparently coincident with joints, but if so, introduce weakness apparently and gratuitously where it is least of all welcome; the same objection applies to a flat pilaster-like pier carried up without break from ground-line to cornice.

There is one kind of plain wall which meets us too frequently in buildings of even magnificent pretence, and is more unsatisfactory still than that of plain brick, and exaggerates its incongruity of unaccentuated finish, of coming to a stop without reason patent and without anticipation of being stopped. Such are the plain stuccoed walls which do not even carry the lines which are often weakly simulative of masonry. For anything that appears, such walls might be mighty megalithic slabs perforated for windows; but their usual effect is of fatal feebleness exaggerated by contrast of the

rusticated lower story which they so frequently surmount. Heavy window-dressings are also frequently not spared, and in this case, even, as when they are applied to windows in a plain brick wall, interfere with that sense of balance and proportionate strength which cannot be left unconciliated if a work of architecture is to have the true effect upon the spectator of a work of art,—to induce him, in the words of Yorick, to "give up the reins of his imagination into the hands of the master,—be pleased he knows not why and cares not wherefore."

## THE LIFE OF A HOUSE AND THE LIMIT OF COST IN BUILDING.

FOR a gorgeous palace to spring from the earth in a night, and, when the object of its production was accomplished, to disappear with equal celerity, was an occurrence by no means considered out of the range of possibility in the East. It is true that the power of the magician, and the ready and potent service of obedient demons, were regarded as the efficient causes of such magical phenomena. But we are told that, as "there is no darkness but ignorance," so there is no magic but that of wealth. It reads, however, more like a fairy tale than a portion of the daily chronicles of the nineteenth century, that a house on the erection of which, within a very few years past, the sum of 270,000*l.* is said to have been expended, is now to be pulled down and sold for the value of its building materials. From the point of view of the architect, who should always contemplate the combination of utility with any amount of grandeur or of luxuriance of embellishment, such a fact is in the highest degree instructive.

That the duration of a house is to be compared to that of a family, rather than to that of an individual, is a condition that may be said to underlie the very existence of domestic architecture. The tent of the Bedouin, or the cane-built huts of the Japanese, have indeed what may be called less tenacity of life than almost any one of their owners. But the moment that we come to building proper, comprising the work of the mason or of the bricklayer, the idea of the builder is to house, not the individual alone, but the family. And although the most permanent of all human erections are at the same time, so far as we can judge, also those of the greatest antiquity, within historic times the advance of a people in civilisation has been reflected by the increased durability of their structures. Let any one compare the early Celtic churches with the noble ecclesiastical structures of the eleventh, twelfth, thirteenth, and fourteenth centuries, and see how, with the grandeur of conception gained by the architect, his effort to give permanence to his conceptions has become more and more sustained, and more and more successful. If we look to the changes which the present century is bringing over the English landscape, referring not only to the erection of new houses or public buildings, but also to the maintenance or modification of old ones, we shall be struck by the remark that one great force is the main source of the entire transformation. That force is the steady increase of population. It is a spring of revolution, the fulness and power of which we are now only beginning to realise. Its influence is irresistible, and its effect is to be traced by those who intelligently seek for it in almost every department of social life. That the increase of population is the mainspring of the demand for new houses, there is, of course, no room to doubt. As every decade increases the number of the inhabitants of Great Britain by from 11 to 14·9 per cent., a corresponding demand arises for an addition to our existing five millions of houses. In point of fact, between 1871 and 1881, 575,000 houses were added to the 4,260,000 which were inhabited in the former year. With regard to this, again, it should be borne in mind that the urban population now forms exactly 66·6 per cent. of the entire population of England and Wales. Again, of this urban population nearly one half, or 29·7 of the population, are located in towns of 100,000 inhabitants and upwards. We have thus not only large and steady increase, but increase concentrated on a few points. Thus, to speak in round numbers (as being really more instructive than those of minuter detail), out of the four and a quarter millions of houses that were inhabited in England and Wales in April, 1881, 650,000, or nearly 14 per cent. of the entire number, are within the "Greater London" of the Registrar-General's returns. We then have, if we take the houses to be in the proportion of the population, about 16 per cent. more in towns of the population of 100,000 and upwards; 18 per cent. in towns of 20,000 and upwards; and, again, 18 per cent. in towns of between 3,000 and 20,000 inhabitants. Thus the change is the most rapid where the concentration is already the greatest. Eight thousand six hundred houses are annually added to London. A proportion exceeding one-seventh is added to our twenty principal towns. And even this addition does not keep pace with the contemporaneous increase of the population; so that it is evident that the size of the houses, and their capacity to hold a larger number of inmates, is on the increase. Thus we have 30 per cent. of our increased accommodation confined to London and our large towns, 36·6 per cent. distributed among our smaller towns, and only 33 per cent. over the entire face of the country. Taking the area of "Greater London" at 700 square miles (which is only about 1,500 acres in excess of the truth), nearly one-sixth of the building going on in England is concentrated on one area, comprising only one-eightieth part of the area of the country. It is evident, therefore, that the transforming power exercised by the growth of the metropolitan population must be from twelve to fourteen times as much as that prevalent over the whole area of the country. And if we limit our purview to the 122 miles, out of this larger area of 700 miles, which form "Registration London," the intensity will be correspondingly increased.

It thus becomes a matter requiring no small judgment on the part of the architect to advise as to the expenditure of any very large sum of money in a locality subject to so great a transforming influence. To build a house that is suitable for to-day may be comparatively easy; but what will be the surrounding conditions ten, twenty, thirty years hence? And thirty years is, or ought to be, but a small portion of the life of a good house.

We can cite a remarkable instance of the force of these considerations in the case of one of our noblest suburban palaces,—ducal Chiswick. Chiswick House is, perhaps, less known than ought to be the case. It is a remarkably successful instance of the adaptation of an Italian style of palazzo to the requirements of the English climate. Few suites of reception-rooms, not only in England, but we may say in Europe, can compare with the series of some twenty-one connected apartments that occupy the *piano nobile*, or principal floor, behind and to the west of the great portico and external staircase. The greater part of the villa is on two floors alone, to allow of the lighting of the central series of these rooms from the roof, although at the ends of the building, where windows open all round, two small suites of apartments rise above the level of the skylight. But the wonderful charm,—or rather a wonderful charm,—of this stately palace, is found in the fact that from no window of the house is any building visible, except those dependent on the house itself,—as stables and gardeners' accommodation. Within forty-five minutes' drive of the House of Lords, the occupant of Chiswick House looks upon nothing but park and garden. Such an area within a ring-fence is unique, so near the metropolis. It might be thought large enough to laugh at the builder; but, alas! some of the nobler children of the forest are strangely impatient of a city atmosphere. The cedars and pines of Chiswick are, in many instances, giving signs of a sort of creeping paralysis, and we use the words of one of the first of our living botanical authorities when we say that the sickness is incurable. Trees which have been admired by Linnæus himself are sickening beneath the London smoke-cloud, even when they gird and dot such an unbroken area of turf as the park and drives that surround Chiswick House.

It is, of course, the case that non-deciduous trees suffer far more than do those English forest trees that renew their youth and their foliage every spring. But even the lofty elms of Kensington Gardens and of Hyde Park show little promise of attaining a great vegetable longevity. And if in those areas,—priceless as is their value, augmenting as it does year by year,—where royal or noble ownership has refused to barter nature for silver, and to cut up park into building ground, nature herself shows signs of retiring from the strife, does it not well become the architect to ponder how, as well as where, he builds for the future, in a locality thus subject to the very hottest blast of natural increment of density of abode?

In the case of Kensington House it is apparent to the most hasty consideration that it was a mistake of irreparable magnitude to build a house of such a character on so small an area of ground. We are not about to say a word either in admiration or in deprecation of the design or execution of the house itself. The absence of proper garden and park is, in our judgment, ample reason for the non-letting of the building. If we only follow at a modest distance the brand-new splendour of New York, still we have houses in London of palatial grandeur. Nor do we believe that the mere question of cost or of rent, large though it be, would have proved so insoluble as to involve the demolition of a building so splendid, whatever be said of its taste. But those who pay thousands for rent are not content to have the traffic of a busy thoroughfare carried on, night and day, in close proximity to their chambers. A town house has its proper idiosyncrasy,—its advantages and its disadvantages. A palace dropped down alongside of a street, unless it be an Italian street, sinks to the level of its neighbours instead of elevating them to its own. We trust that the failure of this costly experiment will not be without compensation, if it be only to impress on owners, on the profession, and on the public, the fact that one of the first necessities of a fine architectural building is that it should be suited for its purpose and congruous to its site.

In reply, we may anticipate the questions, "How about Genoa?—how about Naples?—and other Italian cities?" where every inch of ground is so covered with buildings, including superb hereditary palaces, as to leave hardly room for a vehicle to pass between them.

The answer is ready to those who contrast the climate and the size of Genoa or of Naples with those of London. The troubled state of Italy during the great building period drove the nobles to rear their abodes within the walls of their native cities; and thus led to the occupation of every available foot of area, and to the further economy of plan obtained by the lofty height of the *palazzi*. But the resemblance between the small area comprised within the walls of a Mediæval Italian city, and the 122 miles (not to say the 700 miles) of smoke-producing London, is of the slightest. On the roof or in the uppermost chambers of the great Genoese palaces there is a fair look-out over mountains and sea; and air and sunshine come as freely as they do to the cottagers of an English village. Again, the very proximity of the Genoese palaces to one another, and the narrow width of the *vicoli* between them, secures freedom from that constant roar of traffic which is one of the greatest drawbacks to the comfort of a house built close to a great London thoroughfare. The objections to the adoption of such a mansion as Kensington House for a noble residence are, in the first instance, noise; in the second, "blacks" and want of fresh air. Neither of these troubles afflicts the inhabitants of a Genoese *palazzo*.

At Naples, it is true that the palace is directly bounded, on the north and on the west, by lava-paved streets. But Van Vitelli knew what he was about. An interior corridor, practicable for carriages, on the side of the great Piazza,—a square of garden recessed between the wings of the palace on the north,—so shut out the continual clamour of the streets, that perfect quiet prevails in all the main apartments of the palace. The private suite of rooms intended for the use of the sovereign are at the top of the palace, in the south-eastern corner, opening on a broad terrace,—a sort of hanging garden,—that looks out over the bay, and is as removed from the noise of the town as if at the distance of a mile or more. While as to atmosphere!—no spot in the world is more delicious.

At the Royal Palace at Portici, the main road from Naples to Castellamare runs through an archway in the palace itself. We cannot speak with the same familiarity of the interior arrangements of this palace as with regard to those of Naples or of Caserta, but the size of the building is ample to ensure both privacy and quiet to the occupants. As such, it was offered by King Ferdinand II. for the residence of Pope Pius IX. on his flight from Rome, and was inhabited for some months by the Pontiff. The

portion of the palace to the west of the road looks down through a vista of gardens to the lovely semicircle of the Bay of Naples.

To Naples it is given to unite the convenience and the charm of an urban with those of a rural site. Such cannot be for a moment said to be the case in London. Thus site and area become dominant conditions for the London architect. And if, by a lavish outlay of money, he complies with the command to rear a palace on an inadequate site, we have before us a striking comment on the unwisdom of the proceeding.

The palace of Fortunatus at Kensington is not the only noted London house which is about to pass into the hands of the dissectors. Two houses in Great Ormond-street have to endure the same hard fate. One very significant fact attends on the demolition of the latter. It is significant in more ways than one. The bricks are so superior to any that can now be purchased that it is probable that their second-hand use will afford finer brickwork than we now can often see. But while this speaks well for the old brickmakers (if not so for their cheaper successors), what about the mortar? What would be the value, for facing buildings, of bricks taken from an old piece of Roman work, in this country, or from any structure of *mattoni*, old or new, in Italy? To obtain a whole and unchipped brick from an Italian building would be difficult. In the case of the Thames Tunnel it was found requisite for the safety of the work to build the screen, a wall that divides the two roadways, solid, and to cut out the arches with the cold chisel when the shield had advanced far enough ahead. We well remember, on a visit to the tunnel when in course of execution, being told by Mr. Beamish, the resident engineer, that although a small premium was offered for every brick that was got out whole, it was very rarely obtained. On one or two occasions it seemed that bricks had been hastily set close to the shield without proper cementing, so that they were got out, in a small parcel, uninjured. But these cases were extremely rare, and, as a rule, the cement was as hard as the bricks which it united into one mass.

Is it not a matter demanding the very serious consideration of the architect why it is the case that we can take to pieces a brick building of fifty or a hundred years old brick by brick? If it were set in cement we could not, as we have just seen, think of so doing. If it were Roman work, in spite of the disintegrating action of the work of time for fourteen centuries, we could not do so. If it were brick and mortar of a few years old, built as the Italian architect builds to-day, with lime mortar, we could not do so. The author of a useful little book on "Joints made and used by Builders," to which we recently called attention, remarks, "Being formed by the juxtaposition of every block, brick, timber, slate, or piece of material, howsoever united, joints are well-nigh ubiquitous, and it is easy to see that they form a large part of the workmanship of an edifice, and that, in fact, good workmanship must in all cases be synonymous with good jointing." That, no doubt, is true. But, in a case where any material of the nature of cement is used to form a compact and immovable joint, the question of material is as important as that of workmanship. It is, we suggest, somewhat of an anomaly that we should be content to make such a use of lime for the jointing of brickwork as never to effect perfect cementation, while the very same material, at no increase of expense, but only by reverting to the ancient Roman mode of using it, will so bind together and unite a brick structure as to give it almost the strength and durability of a monolith.

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**Workmen's Dwellings.**—The Workmen's Dwellings Committee has adopted its report, and is now about to hold a final meeting. It is said that their report deals in a thorough-going manner with the subject of workmen's dwellings in London, and it proposes the consolidation of the Acts having reference to this question, the more stringent enforcement of sanitary laws, and the establishment of cheap workmen's trains, which would admit of artisans living at greater distances from their employment than is possible at present. Sir R. Cross entirely agrees with the other members of the committee as to the comparative inefficiency of his own legislation on this subject, and as to the desirability of strengthening Mr. Torrens's Act.—*Standard.*

## THE DOMED CHURCHES OF CHARENTE.

### THE "SHARPE MEMORIAL" VOLUME.

THE book which has been got up by the Architectural Association as a memorial at once of their visit to the churches of the Charente district in 1875, and of the friend who conducted the excursion, has at last been issued after what appears a very long delay to some, at all events, of its subscribers. The volume,* now that it has appeared, is certainly a beautiful one, both in regard to the illustrations contained in it, and the manner in which it is bound and printed, though it is a pity that it has been allowed to be so long in hand that some of the interest which would unquestionably have been felt about it has unavoidably evaporated.

Mr. Sharpe's name and career are too familiar to all our readers to need recapitulation here. A short memoir prefixed to the volume before us serves as a memorandum in regard to Mr. Sharpe's peculiarly energetic character, and the variety of matters into which he successively or at times simultaneously threw himself, almost always carrying out successfully what he undertook. His most important work is certainly his "Architectural Parallels," in which he brought the illustration of Gothic architecture to the highest perfection, and produced a volume which will always remain among the most complete and thoroughly creditable productions of English illustrative architecture. His other works have been noticed by us from time to time, those especially on the elucidation of Cistercian architecture, in which he took special interest, though some of his views in regard to Cistercian archæology have been questioned, not without good reason. But Mr. Sharpe's energies were displayed also in lines quite distinct from those of archæology; he was an excellent administrator of work and workmen, and was, in several cases, railway contractor, railway manager, and then railway owner, and seems to have had the faculty both of carrying through work of this kind, and of making it pay,—an even more valuable quality. The portion of Mr. Sharpe's work which ultimately led to his being commemorated in the book before us was taken up by him in 1870, when he induced a considerable number of members of the Architectural Association to accompany him in a tour among the churches of Lincolnshire, he acting as "guide, philosopher, and friend," throughout. No excursion of the kind could have been more successful; perfect weather, admirable arrangement of everything, and much cordiality on the part of the clergy and others connected with the churches that were visited, combined with the real interest of the architecture visited, and the healthy stimulus of a kind of rivalry in hard work in the way of sketching and measuring, made this a most pleasant and to many of the party a memorable week; but nothing contributed more to the success of the expedition than the pleasant genial manner of its conductor, of whom it was remarked that not only could he give the party (mostly young men) a great deal of information on Gothic architecture gathered in the course of many years' study, but that he had retained the happy faculty of being himself young with the young, and was one of the gayest of the party throughout. It is no wonder that those who accompanied him in various years to different sites of architectural interest felt an affection for his memory, which is testified in a very suitable manner by the publication, by subscription of those interested in it, of this volume illustrating the results of the first excursion of the Association which he conducted out of England, and which, as it unhappily turned out, was to be the last which he was to make. It is pleasantly significant of the feeling with which this memorial volume has been got up, that the names of the members who have practically assisted in making the various drawings are by their own wish left without record, they considering that "they have merely acted for the Architectural Association, and on behalf of the whole profession of architects, and many others, who desired to show that they had felt the influence and regretted the loss of Edmund Sharpe": a feeling which is honourable both to those who have executed the memorial and to him in whose memory it has been done.

It would be difficult to overrate the interest, both historical and æsthetic, of the chapter of architecture illustrated in the fifty-nine plates of this book. As to the precise reasons for this peculiar development of quasi-Byzantine architecture in one district of France, there are various opinions, none of which can now be brought to any test of historical truth. The editors have prefaced the volume with some account of the architecture of Charente generally, and of its probable history, which is chiefly a *resumé* of what Mr. Sharpe himself said at the lecture that he gave in London in June, 1876, when he described the excursion and dwelt on the main points of the architecture, before a large audience, which included a good many well-known archæologists and amateurs as well as members of the architectural profession; and which, by dint of the exertions of members of the Architectural Association in enlarging their sketches for the purpose, was illustrated with a profusion of drawings such as has rarely been seen at an architectural lecture.* Mr. Sharpe on that occasion commenced by referring to that remarkable event in architecture, the building of the Church of St. Sophia at Constantinople, and then to the reproduction of its leading features at St. Mark's, Venice, connecting this latter with the building of the well-known church at Perigueux; but what especial influence drove the forms of Byzantine architecture in the direction of this particular province of France can hardly now be matter for anything more than conjecture. The interesting fact remains, however, that we have in this district of Charente above 400 churches of the twelfth century, in which the influence of Byzantine design and methods of construction is evident, more especially in the use of the domed roof instead of the cross vault of ordinary Romanesque architecture. This form is the more interesting from its comparatively fugitive character. It seemed to show the possibility of being worked out into a very fine and complete style; but it was elbowed out of existence by the close of the century, by the superior attractions of the completely vertical style of pointed and vaulted Gothic, which harmonised better with the enthusiastic and aspiring spirit under which Mediæval architecture proper was originated and brought to perfection.

Of the west fronts of the churches given in this volume there are two types; those (undoubtedly the earlier) in which the tendency is towards a vertical treatment, the front being divided into strips vertically by long engaged shafts running up a great portion of the whole height of the front, and running through the horizontal bands of ornament or moulding which may cross the front, just as in later Gothic the vaulting shafts run through the triforium string-courses; there is the other, in which these large shafts have disappeared, and in which the front shows a large door-arch, with perhaps a smaller ornamental wall-arch on either side of it, and above this one or more tiers of smaller wall-arcading running across the front. Most of the west fronts drawn in the volume can be reduced to one or other of these types; the first-mentioned type is, however, only represented by three examples, Angoulême, Roulet, and Lanville. It may seem strange, after we have been speaking of this style of domed architecture being thrust out by the vertical Gothic, to speak of the west fronts with vertical features as the oldest; but the explanation will be obvious to any one who studies the drawings. It is this, that in such a front as that of Angoulême, for instance, the long three-quarter wall-shafts, with high carved capitals showing square abaci, and the remains of a volute at the angles, are not in reality the first beginnings of vertical Gothic features, but rather the last reminiscence of the Roman Classic arcade,—greatly attenuated, it is true, but yet still retaining distinct traces of its Classic character, more especially in the archivolt, with its flat face and soffit and unmoulded arris, and in the high square projecting base on which the shaft stands; and there is something not easily describable in the whole appearance of this architectural feature as seen in the instances named, but pre-eminently in that of Angoulême, which clearly indicates that it has little affinity with the Gothic spirit of building. In the other class of front, as seen, for instance, in La Palud and Bourg Charente, although there is more marked horizontality of division, we find that details and a feeling distinctly Gothic are to be discerned; the archivolts are recessed

* A Visit to the Domed Churches of Charente, France, by the Architectural Association of London, in the year 1875. Published as a Memorial to Edmund Sharpe. With an Historical and Descriptive Text, illustrated by sixty photo-lithographed plates.

* This address by Mr. Sharpe will be found *in extenso* in our volume for 1876 (xxxiv.), p. 633.

in receding planes (the most marked, perhaps, of all distinctions between Gothic and Classic principle in building), and the feeling for repetition and multiplicity of parts which is so characteristic of Mediæval architecture begins to show itself. This apparent verticality, which is really anti-Gothic and not Gothic, is one of the most curious points to be noticed in studying these illustrations. This remarkable struggle between Classic and Gothic ideas is shown in another manner in the eastern apse at Plassac, where, again, there is the arch with the flat soffit in the wall arcading, but the manner in which the longer shaft runs through the caps of the wall-arcade to the cornice is more suggestive of Gothic feeling, as also the way in which the three shafts, this long one and the arcade shaft on either side of it, show symptoms of blending into a "pier." The function of the long shaft in the apse of Plassac is, however, really that of the buttress, but before it has put on the slightest semblance of the buttress form.

Another point in the architecture of the Charente domed churches which is well brought out in the illustrations, and to which special attention is directed in the text, is the treatment of the pendentives of the domes and the manner in which they are set on the supporting arches. This becomes a curious problem, for in a good many cases the arches which carry the domes are pointed, and, of course, do not lend themselves with precision to the lines of a pendentive circular on plan. The difficulty is met in several cases by the shaping of the voussoirs of the arches so as to enlarge towards their extrados in such proportion as to meet pretty fairly the curve of the pendentive, which, in some cases, at any rate, is probably also a little doctored to assist in meeting the voussoirs. This is not by any means scientific construction, it is "fudging," in fact, but it is an interesting example of the practical effort to overcome a difficulty which very likely, in the earlier cases at least, was not recognised till the actual point in the building was arrived at where it made itself felt. At St. Armand de Boixe a curious variation occurs, as here the pendentive curve springs entirely from the extrados of the voussoirs, which are perfectly flat on their surface; and the pendentive, which appears to be got on to the arches somehow, by rule of thumb, without any apparent adjustment, is carried up three or four courses above the arch, forming a kind of drum growing imperceptibly out of the four pendentives. At Roulet and Montbron are to be seen octagonal cupolas, with a semicircular squinch across the angles, carrying the alternate faces of the cupola.

No praise could well be too high for the grand and massive character of some of the interiors which are shown in admirably drawn perspective views. The fact that some of them are entirely bare of ornamental detail serves only to make them the more suggestive to the architectural student, who may see in them the outlines of grand architectural composition which he could fill up in many different ways in detail, according to the promptings of his fancy. It would not be bad practice for young students to give them one or two of these interiors, with their bare walls and pilasters and plain bell capitals, to add decoration to in a suitable spirit. The caps in some of these are very curious, for they seem literally like the "bell" of a Classic capital with the leaves stripped off.

The external finish of the principal cupolas, which is peculiar to the district, and very considerably resembles a pine-apple, is not one of the most beautiful though it is certainly one of the most curious features which architecture has invented. Its resemblance in general appearance and proportion to some of the towers or turrets prevalent in Hindoo architecture, is curious, though it can only be regarded as purely accidental. The towers at Angoulême, it may be observed, bear, on the other hand, a very strong resemblance to the typical form of Italian campanile with successive stages of window openings increasing in number, though the treatment has more of massiveness and less grace and refinement than were attained in the Italian structures.

The ornamental details given, which are tolerably numerous, are as suggestive as the buildings considered *en masse*. The capitals play all kinds of variations on types of ornament which at one time recal Classic work, at another suggest the future development of Gothic detail. In one of the capitals from Cellefrouin (plate 13), we see a capital decorated with twisted stalks, from which sprout leaves which are almost precisely like the Greek honeysuckle ornament treated with the freedom of natural growth, and thus given quite a new expression. In the rich impost from Lanville (plate 30), a remarkably broad and fine effect is produced by a mass of foliage, which is really another modification of that apparently immortal Greek ornament, looking as if it had run to seed and sprouted in the wildest luxuriance, as a layer of architectural vegetation covering the whole surface of a series of receding capitals. The most curious animal forms appear, twined about with conventional foliage after the Byzantine manner, or sometimes representing scenes of the chase evidently intended to be as realistic and spirited as the executants could make them. Some of the strangest details are from Cellefrouin, in which all sorts of styles appear to be ending and beginning. The Classic cantilever, with a characteristic treatment, appears side by side with Byzantine leaf-carving and with an inchoate form of the dogtooth ornament; and an intersecting arcade (plate 45) offers the most singular combination of light coupled shafts completely Gothic in feeling (though with a capital such as we have seen nowhere else), with a heavy intersecting arcade of arches with flat faces and soffits, and not a particle of ornament of any kind to lighten them. Two or three of the carved doorways of many orders resemble the richest Norman work; but with forms and combinations peculiar to themselves. Altogether the book is of the highest interest, and we are only disposed to regret that its circulation is restricted to the subscribers, and that it is not open to public purchase. We hope that copies will be bought for the leading libraries; it is certainly a book which ought to be made as accessible as possible to architectural students.

## THE SOCIETY FOR THE PROTECTION OF ANCIENT BUILDINGS.

THE annual meeting of this society was held in the hall of the Society of Arts, Mr. J. Bryce, M.P., in the chair.

Mr. William Morris (one of the hon. secretaries) read the annual report, which recorded that the committee had had to protest against several schemes for what they deemed to be the mere unnecessary or wanton destruction of ancient buildings. The society was extending its operations to many of the ancient cities on the Continent, and they were endeavouring to spread a desire for the protection of that which was ancient and beautiful.

The chairman, in moving the adoption of the report, said the society had no desire to preserve anything not worthy of preservation; they wished to prevent the repairing and restoration of old buildings in such a style of reproduction as to represent a lie. The society at its annual meetings generally laboured under the difficulty of having an educated and refined audience, whose sympathies were generally in accord with the society's object. He thought it would be a good thing if they could get some of the local architects and some of the old churchwardens, whose chief ambition was to see how they could utilise some of the old materials of ancient buildings in carrying out what they considered would be good local improvements. He contended that ancient buildings and monuments belonged to the nation, and that no local or private authority ought to have the right to destroy them. He hoped that the proposed Bill of Mr. Lefevre would embody this principle. He was in favour of having local societies in connexion with the central committee spread throughout the country.

Mr. C. Kegan Paul seconded the motion, which was carried. The following resolutions were also agreed to, the first on the motion of Lord Richard Grosvenor:—

"That in the opinion of this meeting efforts should be made to impress upon the guardians or owners of our ancient buildings that it is their duty and obligation to cause to be done to them all such repairs as will suffice to preserve them from falling into ruin or decay.

"That in the opinion of this meeting the attempt to reproduce the features of a bygone style in the reparation of ancient buildings is impossible to be successful, and must of necessity seriously injure such buildings as have to undergo the operation both as regards their artistic and historical interest."

## "CLASSIC ARCHITECTURE."

THIS is the volume by Messrs. Roger Smith and J. Slater, which forms one number of the Illustrated Art Handbook series,* and concerning which we made a slight complaint before, that the two books were published in their wrong order, and that the Classic architecture volume, forming, as it must do, the necessary preface to Gothic architecture, ought to have been produced first. However, the volume on Classic architecture is better late than never.

In the introduction, architecture is described as "building at its best," which is too vague for a definition, but not a bad characterisation. The author (we must speak of the authorship in the singular number for convenience) suggests the division of all architecture into four broadly-marked groups,—the trabeated columnar, the round arched (whether columnar or not), the pointed-arched, and the imitative architecture of the Renaissance and succeeding period, which latter is marked also "by that luxury, complexity, and ostentation which, with other qualities, are well comprehended under the epithet modern." This method of classifying modern architecture is, we should suggest, a good deal too simple for the complexity of the subject; but as the present volume is not really concerned with Renaissance architecture, but only with the true Classic styles, the point may be passed over here. A further classification is made in regard to the elements of building, which are divided into (1) floor or plan, (2) walls, (3) roof, (4) openings, (5) columns, (6) ornaments, and (7) distinctive character. This is a very unsatisfactory and loosely-expressed classification. "Columns" should have been "piers," or "supports," which is obviously what is really meant, and is the only sense in which this part of the classification can be accepted as generally applicable. "Distinctive character" is too vague an attribute to be classed as a separate quality; it is, in fact, so far as it can be defined at all, in a great measure inherent in the differences and peculiarities of the other portions already classed. The author proceeds rightly to point out that the method of covering openings exercises a most important effect on the style of a building, but the confusion of expression between "pier," and "column," which is continued throughout the book, is one that should not occur in a small text-book. We should also question the assertion that the Greek temples were designed chiefly for external effect, and to please those who examined them from without. The Greek architecture was less purely internal than the Egyptian, certainly, but it must be remembered that we can judge better of the exterior aspect than of the interior from the ruined remnants of the temples, and for ourselves we should hesitate very much to assert that Greek architecture was not in fact and in intention as effective and complete internally as externally, when in its normal state of decoration and lighting.

The leading features of the main styles treated of are well illustrated, however, both in description and in numerous engravings, three or four of which we are enabled to reproduce as specimens of the style in which the small volume is illustrated. The author includes Hindoo architecture in his subject, which we are therefore to suppose that he regards as an allied branch of Classic architecture; and though no explanation is offered on this head, the small bit of quasi-Greek ornament from Allahabad (wonderfully Greek, considering its locality) may be taken as a kind of practical justification of this classification of Hindoo architecture. This chapter is preceded by that on Egypt and Assyria (due regard being had to the hints of Greek style foreshadowed in Assyrian detail, capitals, &c.), and followed by that on Greek architecture, which is, of course, one of the most interesting points of the book. How a writer on this subject treats Greek architecture may almost be regarded as a test of the fitness of a book to form a guide and text-book to Classic architecture. This portion of the work is, in the main, eminently satisfactory. There are only two points to which we should be disposed to take a little exception; one is the statement that the alteration of the heights of members of the architecture in order to allow for the effect of perspective was "demonstrated" by Mr. Pennethorne in his

* Architecture, Classic and Early Christian. By T. Roger Smith, Professor of Architecture, University College, London, and John Slater, B.A., F.R.I.B.A. London: Sampson Low & Co. 1882.

work on the "Geometry and Optics of Ancient Architecture"; our opinion, as previously expressed, is that the author of that book failed to "demonstrate" simply because he tried to prove too much. That the Greeks should have altered the dimensions of the upper members of their architecture in order to allow for the perspective diminution of them as they receded from the eye is exceedingly reasonable and exceedingly probable; but Mr. Pennethorne claimed to have proved the connexion of this practice with an adherence to minute and pedantic observations of proportion such as would have been quite ineffective and unmeasurable by the eye in practice, and the apparent proofs of which would only be obtained by the assumption of ideas in regard to the method of the Greek architects for which there was no substantial proof forthcoming, and which involved, without meaning any disrespect to the author of a very elaborate and deeply-considered book, the presupposition of some of what we can only call absurdities. There is nothing in Mr. Penrose's book on the optical refinements of the Parthenon of which this can be said, and, therefore, we object to see the two things classed together. The other point which we should put a note of interrogation to is the rather too positive assumption of the constructive wooden origin of certain parts of the Parthenon details (triglyphs, mutules, guttæ), without any reference to the extraordinary art by which these details, even if they were purely wooden in their origin, were refined by the Greek architects into apparently masonic features. The triglyph is no doubt remotely connected with timber architecture; whether the mutules and guttæ are so seems to us more doubtful, and the connexion, at all events, is very distant. This part of the subject should have been given with more qualification. The fact of the mutules being at a different slope from that of the roof even at the sides, and being carried round the ends where there is no pretence for this suggestion, is conclusive at least that all idea of reference to timber construction had evaporated before the details got into the shape in which we know them.

The general description of the Greek styles is, however, as complete and satisfactory as could well be in so small a compass, and is what we may call profusely illustrated for a book of this size and price. In regard to Greek ornament, there is, indeed, fuller and better illustration given than we have often seen in much larger works, and the author keeps before the mind of his reader the fact that the Greek temples were tolerably profusely ornamented, by giving all the drawings of the temples and parts of them, when at all large enough, with indications of ornament in the portions where no doubt it did exist as painted decoration. On a small-scale engraving, it is true, this gives a false impression to the eye, because the ornament in that case shows by comparison a much greater relative prominence than it would have shown in reality; but this method, nevertheless, helps to keep before the reader's eye and memory the fact that the Parthenon was not an undecorated mass of white marble. Attention is called to one very beautiful point in regard to the relation of ornament to its position in Greek work, and one which, as the author truly says, is seldom pointed out, viz., that the outline of the ornament applied to a moulding to enrich it is generally similar to, sometimes identical with, the outline formed by the profile of the moulding itself,—a fact highly characteristic of that sense of logical relationship of parts in which the Greek architectural designers were so pre-eminent. In speaking of Roman ornament, the coarseness of which both in regard to decorative ornament and mouldings, when compared with Greek work, is duly pointed out, the author misses, however, what we believe to be the real relation between much of Roman ornament and its Greek originals, namely, that the Romans carved in relief, and thus brought into overdue prominence and importance, ornament which the Greek only painted on the surface. Hence the comparatively over-rich and "pie-crust" character of some of the more sumptuous Roman examples.

Roman architecture is, however, very fully treated and illustrated in the space allotted to it, and the progress through the Roman basilica architecture to the Romanesque which forms the link between Classic and Gothic architecture is sufficiently exemplified. We give one of the illustrations of the basilica interior, that of St. Paul without the Walls,* which forms one of the best examples of those buildings in which the Classic forms of architecture began to put on the Christian spirit which was destined to work itself out eventually into the complete form of the Mediæval church. The outline perspective view of St. Sernin* at Toulouse forms a fine and characteristic example of the period when the reminiscence of Classic forms was still strongly manifested in a type of building which, nevertheless, had begun to exhibit that greater elaboration and multiplicity of design which is one of the main distinctions of Mediæval as compared with Classic building. The progress of detail from the Roman to the Mediæval spirit is well exemplified in the doorway from the Romanesque church at Koesfeld,* which forms the third of the illustrations we have selected, where the peculiarly Mediæval feature of the receding planes of the arch mouldings is seen combined with details which still display a distinct reference to Classic types. In the Byzantine capital from San Michele at Ravenna* the Gothic spirit in detail has become nearly predominant, the ornament of the centre portion of the capital, though undoubtedly derived originally from Roman scroll ornament, has here lost almost all trace of its Classic origin; but the trace of this is still distinctly seen in the marginal ornament, which has an obvious and unmistakable reference to the Greek honeysuckle ornament, though treated with a freedom and irregularity quite at variance with the traditions of Classic art. These illustrations serve to indicate with how much judgment the examples have been selected as typical of the prominent historical changes which architecture in this transition period was passing through. Below the bell of the capital, in the last illustration, the bands which form the necking may fairly be regarded as a rough and rather coarse survival of the delicate and refined annulet ornament of the Doric column.

We may congratulate Professor Smith and his coadjutor on the production of a volume which forms a very useful popular guide-book to the portion of architectural history of which it treats.

## THE MOSCOW EXHIBITION.

THE exhibition which was recently opened in the old capital of Russia is unanimously reported to be a success far beyond the expectations of its promoters. It is really the first general exhibition of industry and art in Russia. The opening-day sufficed to show the enthusiasm with which the population regarded the enterprise. The inaugural ceremony attracted many thousands of spectators, and was in every way worthy of the occasion. The Grand Duke Vladimir appeared as representative of the Czar at the opening, and was accompanied by Prince Eugene, of Leuchtenberg. On their way to the exhibition building these princes were enthusiastically cheered by the multitude who lined the streets, as well as by the crowds assembled near the Kremlin, in the exhibition, and afterwards at the theatre in the evening. The enthusiasm was repeated on the following day along the whole route, several miles in length from the Kremlin to the exhibition grounds. On the opening day the Grand Duke Vladimir, who appeared in the new Russian National uniform, was present not only at the religious service conducted by the Metropolitan Makarius, but at the concert at which Rubenstein's new "Russian Symphony," comprising all the local popular airs of Russia, was performed in honour of the occasion. The exhibition, of which the Grand Duke subsequently took a first inspection, is purely one of Russian products and manufactures. It is described as one of extraordinary extent and variety. The number of visitors has been very large every day since it opened.

**Darlaston, Staffordshire.**—Mr. Edward Pritchard, C.E., of London and Birmingham, has been called in professionally by the local board to advise them as to the best method of dealing with the sewage of their town, to prevent the Birmingham Corporation taking their threatened proceedings under the Rivers Pollution Act, in consequence of the river Tame being polluted by their sewage flowing into that river.

* See p. 745.

## THE TOWN BUILDINGS OF THE FUTURE.

THE chief preliminary observation in conversation of Englishmen is usually considered to be an inquiry or remark as to the state of the weather, but an almost equally common topic of conversation at the present day may be said to be the increasing size of our large cities. This increase, indeed, is a fact which has already had wide social and political influences, and the subject in this aspect is one of deep interest to all who bestow any thought upon the social and political condition of the country. It is hardly less interesting, however, to consider some of the probable effects of the present size of our towns, and of their certain increase in the future, upon the character of our buildings, and changes in the style and nature of the structures of our cities must necessarily have an influence on the social and domestic habits and character of those who live in them.

The main tendency of the future in consequence of the enlarged area of our towns must necessarily be not only an attempt to make the outskirts as accessible as possible to the centres, but also to prevent the further enlargement of towns and the consequent lengthening of distances. It is clear that towns will go on increasing in area without much check for a comparatively long period, but a time must arrive when the desire of the inhabitants is, if possible, not to go further but to utilise so much of the space as is already built over more than is done at present. The increase in area must necessarily continue; but, on the other hand, a contrary influence strengthens and increases. At such time towns begin largely to increase in height, and it is in an increase in the height of our town houses that the increase of the future is sure to be most marked. Our only surprise is that altitude of buildings has not become a more distinctive feature of the age before this than it has done. But, as it is, signs are not wanting that a tendency in this direction is growing up, and we have very little doubt that from year to year it will become more marked, and will become a characteristic feature of the buildings of a not very distant age; for there can be no question that what may be termed a general heightening of buildings would enable a larger number of persons to dwell nearer the centre of our larger cities than they can do in houses of the present height; and also the more persons get familiarised with this change in the aspect of buildings the more it will become a familiar and accepted result of the increasing population of our towns. Of course, an immediate result of the heightening of buildings would be to make dwelling in flats an ordinary feature of our social existence. So far flats are not an ordinary feature of English towns as they are of Edinburgh and the large Continental cities. This is, perhaps, not wholly surprising, when we bear in mind the very high rents which it is customary to charge for flats in London; whereas there can be no question that a flat should be a cheaper habitation than a single house. The ground-rent should be proportionately less; there are possibilities for economy both in heating and lighting, and the cost of building a flat should also be proportionably less than that of erecting an ordinary house, and there must be many feasible improvements to be made, such as automatic lifts and so forth. Therefore we are inclined to think it may reasonably be supposed that, as it becomes more common to dwell in higher houses, so the rent of flats will, for a time at any rate, become more moderate and more within the power of persons of small means. With electricity, also, only in its infancy, we can feel no doubt that this element will play an important part in connexion with the higher houses of the future. Moreover, high houses seem to have many sanitary advantages, for the cost of elaborate and effective ventilation, and of careful sanitary arrangements, must clearly be less when spread over a number of dwellings within one dwelling-house than when charged on one comparatively small dwelling-house alone, and also individual apathy will have less influence than it has at present. For whilst now an apathetic householder can permit the sanitary state of his home to be as bad as he likes, there are in a community of persons certain to be some energetic and careful people who will take care that

the health of the community is not endangered by the apathy of one or two persons. Because, be it observed, it is much more apathy than active hostility to sanitary improvements which, as a whole, is the bar to a more rapid improvement in the general sanitary state of our towns. Again, the congregating of persons in a single dwelling-place must necessarily be an incentive to all kinds of co-operation, and, consequently, must help to modify the consequences of the expense of living in our large towns. It is true that clubs of the upper and middle classes, although in the nature of co-operative institutions, and although consisting of persons dwelling in one large house, are by no means economical establishments. On the other hand, luxury is one of the pervading characteristics of our modern clubs (and a characteristic, by the way, by no means without evil effects), and there is not a small attempt made at economy; and, therefore, clubs do not seem to have much bearing on the question of residential flats in large high houses.

But it is by no means among the middle classes that high houses may be expected to become general; they are equally certain to be found among the working classes, and there they can hardly fail to be decided improvements over the present dwellings of the poor. The Improved Industrial Dwellings Company has, indeed, taken the lead in this direction, and in various parts of London and our larger cities the passer-by may from time to time come across some dwellings of this character. In them the sanitary arrangements can hardly fail to be better, and the houses, from being more carefully built than the ordinary workman's cottages, should, in themselves, be more healthful. Co-operation, again, of a certain character may also be carried on, and we see no reason why in common reading-rooms or halls a very potent enemy of the public-house may not have a prosperous career. Indeed, we consider high houses in flats, with one or two common rooms attached, and a proper playground or play-room for the children, to be dwellings which every one interested in the social and moral improvement of the working-classes should energetically strive to see largely erected.

That large dwellings, both among the middle and lower classes, may have many distinct effects on the general habits of the community is equally obvious; but without discussing these at present, it may be said that there seems no reason why domestic life should become less really private, although at certain times there may be facilities for a larger amount of social intercourse in one house.

From the architect's point of view, too, there are several other aspects from which the question of high houses must be regarded. There is, first of all, the important question of the effects in regard to the Law of Light which must become even more important than it now is if once the tendency to erect high houses grows and strengthens; and it is not improbable that the greatest blow against the existing law and the most likely cause of its abolition will be found in its antagonism to the general sentiment in favour of the erection of dwellings of a considerable altitude. Then, too, if the building of this kind of structures became common, many questions in relation to the width of our streets must necessarily arise; for, without doubt, squares and gardens, rather than streets, are the most fitting shapes in which large buildings of this character should be placed. What a fine space, for example, would Belgrave-square be for a number of big houses! It may be thought, perhaps, that our imagination in respect of the future form of our city dwellings is too vivid, but no one can take notice of the rapidity with which offices and other business premises take their way skywards without feeling that the same tendency must shortly become more marked in regard to the domestic dwellings, not only of the middle-classes, but also of the artisan. No doubt there are other aspects in which they may be regarded in addition to those which we have noted above, and there are many details in relation to them which will well bear discussion; but we have rather sought to take note of the, at present, not very marked social current, and of some of its broadest effects, than to go elaborately into details. For in social matters as in politics, it is the broad underlying currents which should be carefully noted, since the details, which are parts of them, are apt to be regarded as isolated facts, and then the true drift of things is not properly perceived.

## THE COST OF THE INCANDESCENT ELECTRIC LIGHT.

THOSE who witnessed the splended display of arc and incandescent lights shown at the late Electrical Exhibition at the Crystal Palace, and examined the capabilities of the two systems, must have speedily come to the conclusion that, as far as domestic lighting goes, the incandescent light is, as far as it can be seen at present, the light of the future. As yet we have no trustworthy data as to the relative cost of the incandescent light and gas; we have hitherto had nothing but guesswork, and all we know with any certainty is that for the same amount of light the incandescent system is very much dearer than the arc system, about whose cost there is still so much difference of opinion.

Such being the case, a letter which recently appeared in the *Times* from Mr. W. Crookes, F.R.S., so well known to even the unscientific world by his discoveries in chemical and physical science, will be read by practical men with interest, seeing that it gives us a glimpse of what is likely to be the cost of lighting three reception-rooms in a spacious, well-appointed house upon the system under consideration. The glimpse afforded by Mr. Crookes's figures does not amount to very much, but in our present state of ignorance we must be thankful for small mercies. When Mr. Crookes's avowedly approximate estimates are eliminated, and only the indisputable data are accepted, we learn that the relative cost of lighting the same rooms for a year by electricity bred from a gas-engine and a dynamo-machine in the basement, and by gas passing through a meter is 38*l.* 7s. and 43*l.* 4s. 6d. respectively, showing a saving of 4*l.* 17s. 6d. in favour of electricity.

Mr. Crookes tells us that for the last six months he has had the principal reception-rooms in his house in Kensington Park-gardens lighted by the incandescent light, the electricity being generated by a 3½-horse power Otto gas engine, which drives a small Bürgin dynamo machine, giving sufficient electricity to maintain twenty-two 30-candle lamps, or their equivalent, at their full power. There are more lamps than this in Mr. Crookes's house; for instance, he has a cluster of twenty-one 4-candle lamps in his drawing-room and several 20-candle lamps elsewhere, but he tells us that his dynamo is not able to keep them all alight at one time; indeed, the occasions when a private gentleman's drawing-room, dining-room, and library are simultaneously lighted up are rare. The above calculations, it must be understood, are made entirely on the basis of twenty-two 20-candle lamps being maintained at their full power.

The engine seems to require no other trouble than to fill the lubricating oil-cups and start and stop it daily. In the calculation given above 2s. 6d. per week is included for the wages of the engineer who cleans it periodically.

Mr. Crookes next tells us that the expense of installation, including engine, dynamo-machine, wires, and lamps, has not exceeded 300*l.*, but in his estimate Mr. Crookes makes no mention of the interest on this sum or of the percentage to be allowed for wear and tear. Now, 5 per cent. interest on the primary outlay, and the same amount for deterioration, the latter a somewhat low estimate, would add 30*l.* per annum on to the cost of the light, making a total of 68*l.* 7s. per annum instead of 38*l.* 7s. Then, again, Mr. Crookes, who shows the most philosophical candour in his estimates, tells us he had to excavate and build underground rooms for the machinery, besides having to devise and carry out special appliances for carrying off the products of combustion, and to construct silencing chambers to prevent smell and noise reaching his neighbours' noses and ears. It is a pity that Mr. Crookes did not give us these figures, for the expense would be similar in other cases, at least in towns, where every householder who thinks of following Mr. Crookes's example would have to take the same precautions for his own sake as well as his neighbours'. Of course, in the country, where there is plenty of room, this item of expense would disappear, or, at any rate, be greatly reduced.

Taking the case of a country house, therefore, where room is abundant, and some outhouse could be used for the engine and dynamo-machine, the total cost for lighting any two or three large reception-rooms is, including interest and wear and tear, 68*l.* 7s., as against 43*l.* 4s. 6d. for gas; or, in other words, slightly more than half as much again as for gas. To counterbalance this increased expense, we must take into our calculations the manifold virtues of the incandescent light as compared with gas. We have no sooty ceilings; painted decorative work does not blacken and flake off with the smoke and heat; bookbindings are not rotted by sulphurous fumes; gilding is not tarnished; we are not suffocated by the heat, carbonic acid, and half-burnt gas; the air of the room remains cool, fresh, and unvitiated; and fire risk is almost annihilated.

In counting up the cost of gas, Mr. Crookes has not taken into consideration the interest on the outlay for bringing the gas from the main, pipes, brackets, and chandeliers, wear and tear, &c.; but as we have again no data, we must leave these items out of our calculations.

Again, we have said nothing about the cheapness of the electric light as compared with candles, wax or paraffin, or mineral and vegetable oils, wishing to confine ourselves entirely to gas.

For the present, thanks to Mr. Crookes, we are one step nearer to a true estimate of the comparative cost of gas and the incandescent light as applied to the illumination of private dwellings,—but only one step.

## MUNKACSY'S "CHRIST BEFORE PILATE."

THOUGH the importance of this picture has been much overrated, as is generally the case in England with what are regarded as religious pictures, it claims a word of special notice as a powerful and somewhat novel treatment of the subject. The novelty partly consists in what to many persons in this country will seem the most questionable feature in the painting, the elimination of all specially divine appearance or attribute in the principal figure, who appears simply as a thin, worn, and thoughtful devotee, silent and pre-occupied amid the tumult, and with not much even of ordinary human dignity in his manner. Munkacsy seems to have aimed at realising in his Christ the type of a gentle-tempered enthusiast, taken up with a life and with aims quite apart from that of those among whom he is placed. The countenance, however, is not by any means as much at variance with the most generally accepted type of head of the Saviour as has been represented; it is the type of rather long high-browed face, with long hair and beard, which has been so prevalent almost from the earliest periods of painting as to suggest the idea that there must have been some kind of traditional foundation for it in truth; but it is this type of face without the aureole and without the look of superhuman nature with which painters of the orthodox school have endowed it. To many this ideal of Christ, for reasons we need not go into here, will appear more strongly suggestive than the usual painter's ideal.

The grouping of the picture is very effective, except that the two white robes, those of Christ and Pilate, in the centre and at the right of the picture, a little clash with one another, and make a rival claim on the eye. Pilate is seated on a raised seat, with a niche and pediment over it, in what would seem to be intended as a building erected in Jerusalem by the Romans for their own official purposes, for the details are entirely those of Roman architecture. We may add that the architectural portion is rather poorly conceived and drawn. Several of the Jewish rabbis are around the seat of the governor, one in a speech with strong action denouncing the prisoner, another looking round into Pilate's face to see how he is affected by the address, two or three others sit on either side of the governor, as if holding a partly official position in the court. How far this is in accordance with historic probability we will not undertake to say. The remainder of the canvas is occupied by the crowd who have surged into the judgment-hall in the wake of the rabbis, and whom a soldier endeavours to keep back with his spear. One low-looking fellow is shouting at the top of his voice, in a manner which seems improbable in the actul presence of the governor. This figure is evidently designed as a most marked contrast to that of Christ; but the contrast is overdrawn, from an artistic point of view. The figure is too repulsive to be an agreeable element in a picture. One woman in the background looks on with an expression of sympathy and respect for the figure who is the centre of all the tumult. The most successful of all the

figures in point of conception is that of Pilate, which represents admirably the grave, business-like Roman official, the only quiet and unmoved figure, except that of Christ, towards whom he points with a slight gesture of the hand, as if accompanying the words, "Answerest thou nothing?" but with the expression of a man totally outside the real interest of the scene, and merely desirous to arrive at a comprehension of the rights of the case.

The painter has certainly added something to our conception of the great scene he has portrayed, and done something to increase its vividness and reality, and make it live better in our imagination, which is the highest object of historical painting. No one who has seen the picture will read the narrative afterwards without feeling that he has gained something towards realising it in his mind's eye. It is to be wished, we may add, that the picture had been placed in a frame better designed and more in keeping with the subject than the rather vulgar mass of gilt *rococo* which surrounds it.

## GATHERINGS FROM ABROAD.

IT is probably only in Paris that such a scene could be witnessed as that presented by the *Salon* a few Sundays ago (not Whit-Sunday) when over 40,000 visitors passed *gratis* through the turnstiles of the Palais de l'Industrie. Even putting aside the very striking deduction to be drawn from the number of the persons who thus evinced their interest in the exhibition, we see how the Parisian public shows its appreciation of the privileges granted it in the matter of free Sunday amusement and instruction. The comparative desolation of Burlington House even on Whit-Monday last stands as a curious contrast to the scene that is presented by the Palais de l'Industrie every Sunday during May and June, and yet the Parisians have open on the same day all their public museums and great institutions, which will also all be found to be crowded. A few further figures relating to the Paris *Salon* may interest:—3,556 artists exhibit, of whom 708 are ladies (440 painters, 36 sculptors), and 697 are strangers, among whom let us not forget to mention a young Englishman, Mr. William Stott, who has deservedly gained a third-class medal. M. Puvis de Chavannes has been awarded, as we predicted, the grand *médaille d'honneur*, and in the section of architecture, as already announced in these pages, M. Paulin has gained the medal of honour for his beautiful archæological drawings to which reference has before been made in these columns.

On the close of the *Salon*, the Union Centrale, it may be mentioned, will open in August next at the Palais de l'Industrie their seventh modern and retrospective exhibition of decorative art, a show specially to be devoted to furniture, tissues, and books,—three important industries in which France holds, and has long held, a high position in the markets of the world. What house, indeed, does not contain some specimen of French work in each or all of these branches of decorative art, unless, indeed, it be a house (one in Paris) which, we learn from the *Débats*, is the smallest in the capital? Certainly, it would be difficult to imagine a dwelling of more miniature proportion that one in the Rue du Château d'Eau, one story high, with a façade one yard broad and a depth of three yards! The brick trade in France, notwithstanding the large use of stone for building purposes, is in a decidedly improving condition. In addition to the home consumption the yearly exportation from Marseilles is on the increase. In 1878 we learn that the export consisted of something over 5,250,000 of bricks, and hard on 12,000,000 tiles (roof tiles), and some 12,500,000 of *carreaux de terre*, or floor tiles. In 1881 the returns show over 12,000,000 of bricks, 22,250,000 of roof-tiles, and 17,500,000 of floor tiles. Marseilles is the chief port; the trade returns show that nearly half of the whole exportation passes through that city. Compared with the trade of other countries the French brick and tile trade cannot be said to be very important, but an advance of over 60,000*l*.,—180,000*l*. worth of bricks was exported last year as against 120,000*l*. worth some years since,—marks an improvement in the trade.

English Egyptologists will be pleased to hear that a statue, by M. Jacquemart, to the late Mariette Bey is shortly (July 16) to be unveiled in his native town of Boulogne-sur-Mer. The French Government will be represented, as also the learned societies of Paris and London. Boulogne will be for some days *en fête*.

Dr. Schliemann, a no less active archæologist than the late lamented Mariette, is, we learn from the *Allgemeine Zeitung*, hard at work at his excavations in the Troad, as also in the Thracian Chersonesus. At the request of the German antiquaries, he has re-examined the excavated portions of his work without, however, obtaining any important results. The Doctor candidly admits to having until now entertained several erroneous views as to his discoveries. Troy of Homer, which he stated he had laid bare, he now finds to have been very unimportant. The blocks of stone which he had hitherto considered to be the remains of walls of the third city are found to be the remains of houses belonging to the second, destroyed by a fire even more terrible than that which swept over the third city. The Doctor will continue his excavations till August. In the meantime he has sent home a number of sketches of the objects he has so far discovered.

Greece, as the land of archæology, will always retain the romance that is woven round its past. Only a few days since, M. Renan, receiving among "the immortal forty" of the French Academy, M. Cherbuliez, — the well-known novelist,—in speaking of the new comer's visit to Greece (as the result of which he published his "Cheval de Phidias,") referred in touching words to the extraordinary place held by Athens, as "the one place in the world,—there is no second,—in which perfect beauty had been realised"; its monuments "the relics of a world of miracles of divine development which will never be removed. All the rest was of a piece. A whole people admired this art in the Acropolis. This same people heard the perfection of eloquence in the mouth of a Demosthenes; it applauded a dramatic literature which seems made for a group alone of cultivated students; it conversed in a language of elegance and simplicity,—that used by Plato and his friends." And referring to the new Academician's work "Un Cheval de Phidias," in which he "expressed his sentiments on the most profound transformation which has been worked in humanity," he said "as you pointed out, the passage from Paganism to Christianity was, before all, an æsthetic revolution."

A word will not be out of place respecting the Place de la République in Paris, where immense preparations are being made for the approaching fête of the "Quatorze Juillet." The decoration of the huge piazza is advancing rapidly; not so, however, the statue of the Republic. The base is as yet unfinished, and a year will probably elapse before the whole group, with its accompanying decorations, will be completed.

At the Hôtel de Ville great preparations are being made for the July fête, when the new building will, it appears, be solemnly inaugurated in spite of its being, as we have already stated in these columns, far from complete. The exterior is, however, entirely finished. It may be mentioned that the façade is a reproduction of Boccador's original plan, with an additional height and breadth of some eight yards. The total length is 144 mètres (472 ft.). We may mention as apposite the recent publication of a work by M. Marius Vachon on the old Hôtel de Ville ("L'Ancien Hôtel de Ville de Paris, 1533—1871), a sad picture of the terrible destruction of the famous building. The work is profusely illustrated with reproductions of the pictures, sculptures, and other decorations of the original edifice; views at different periods of the Hôtel de Ville,—one by Jacques Cellier of 1583, another by Israel Silvestre of the commencement of the seventeenth century; the whole accompanied by copious letter-press.

Not far from the Hôtel de Ville the Commission of Historic Monuments is restoring the interesting tower of "Jean sans Peur," the sole remaining and rare specimen in Paris of the military architecture of the fifteenth century. To those interested, it may be mentioned that the donjon tower,—in excellent condition in every respect excepting the roof,—is situated at but a very short distance from the Halles Centrales in the Rue aux Ours. It originally formed a portion of the town residence of the powerful Dukes of Burgundy.

Paris is not rich in such picturesque relics of the past; it is not like Nüremberg, where, at the present moment, the National Bavarian Exhibition is drawing its crowds of visitors to the home of Dürer, of Peter Vischer, of Hans Sachs, of Veit Stoss, Adam Kraft, and how many other artists and honest artisans! Bavaria stands out well in the Exhibition, to remain open till the autumn, and no pleasanter or more instructive excursion could be recommended for the "outing" this year than a trip to the quaint old city and its surrounding country, so peculiarly interesting to the architectural student.

Southwards, in Spain, Seville, home of the school of art which produced Zurbaran, Herrera, Velasquez, Alonzo Cano, and Murillo, is only commencing to settle down to the hum-drum of every-day life after the fêtes which have marked the commemoration of the bi-centenary of the death of Murillo, and long will the memory of the processions to the Giralda be recalled, the wreaths placed at the foot of the great picture of the painter, the St. Anthony, and the ovation to the statue in the *plaza* before the museum, and the triumphal car in which the famous "Conception" was represented as being raised from its easel to heaven by the fair hands of angels.

The "Commission Rubens" has just published at Antwerp its first "Bulletin Rubens." The commission was formed after the great fêtes which celebrated the birth of the painter, with a view to collecting all documents relating to Rubens. Every three months a bulletin will be published containing contributions from various sources, but strictly confined to actual facts, not critical views, connected with the life and works of the popular artist, whose magnificent existence was passed in so many countries.

To admirers of early Italian art it may be interesting to know that two curious frescoes attributed, and with every justification, to Botticelli have just been exhibited to the public at the Louvre, which, with the Brera Museum and the small collection at Perugia, monopolises in Europe the speciality of works of art in that most fragile, yet durable, of materials, fresco. The works in question were discovered by accident in the Villa Lemmi, half way on the delightful road from Florence to Fiesole, and historical evidence goes far to show that the pictures really are the work of Botticelli. To those interested, we recommend the charming autotype reproduction published, with accompanying text, in the *Gazette des Beaux-Arts* for May last.

The *Zeitschrift für Bildende Kunst* informs us that a commission, composed of a large number of professional experts, among them the new Royal Gold Medallist Baron von Ferstel, of Vienna, Herr Schmidt, also of Vienna, together with other architects from Munich, Berlin, Cologne, Stuttgart, and elsewhere, met not long since at Ulm with a view to determine on the completion of the cathedral. The principal tower is to be terminated, while internally the work of restoration is rapidly proceeding; the sculptures of the principal portal are also at the present moment undergoing complete restoration. Ulm Cathedral, now a Protestant place of worship, is justly considered to rank among the six most famous Gothic minsters of Germany. The superficies covered by the building is far superior to the Cathedral of Strasburg and St. Stephen's at Vienna, being only inferior to those of Spires and Cologne.

## THE INLAND TRANSPORT OF BUILDING MATERIALS.

ALTHOUGH the subject of canal transport lies almost without the range of the matters germane to the *Builder*, it is impossible to deny that the question of the rate of carriage of building materials is one that practically comes home to us almost daily. The choice of material, in fact, where cost is a primary object, mainly depends on the price of transport. Why do we see brick buildings cover the face of Middlesex, and stone buildings rise in the villages of Derbyshire? There is no doubt that in the latter the native stone supplies a material that is at once better and cheaper than is often the case with brickwork. But a sharp limit to the area of the employment of stone was originally drawn by the cost of horse transport. When it was a question of carrying on the backs of asses or mules every hundredweight of material, it was cheaper to carry coal or wood to a clay country, and then to burn bricks, than it was to carry stone. Thus the limits of stone and of brick, or even of wooden and plaster structures, were originally fixed by the cost of transport, first on

the backs of asses or mules, and then by cart or wagon. With the invention of canals, the range of the mason became extended. The legislation of last century respected the wants of the builder, as well as those of the farmer. In the first Act of Parliament for the construction of the Bridgewater Canal (dated in 1762), the toll of 1d. per ton per mile was authorised on all commodities of any description. But in the Act of Parliament for the Aberdeen Canal, one of the earliest of these undertakings (which received the royal assent in 1793), while it was permitted to charge 5d. per ton per mile "for all iron, timber, goods, wares, merchandise, &c.," "building stone, tiles, lime, and sand," as well as manure, were to be rated at 1½d. per ton. Throughout the Canal Acts of Parliament in general the like distinctions are maintained; and there is no doubt that the architecture of many parts of the country has been greatly benefited in consequence.

Of that very serious inquiry which is now before the notice of the committee of the House of Commons as to railway rates, we have only to refer to those questions that directly affect the builder. They are quite grave enough of themselves to demand investigation. On the 6th current a meeting of the newly organised "Railway and Canal Traders' Association" was held at the Cannon-street Hotel, Mr. James Howard, M.P. for Bedford, in the chair. The difficulty experienced by traders connected with the supply of building materials in dealing with the railway companies was prominently brought before the meeting. One of the speakers represented nine of the chief brickmaking, tilemaking, and terra-cotta making firms in both England and Scotland. He spoke very feelingly of the impossibility of making proper trade arrangements while the charges are as capriciously made by the companies as is now the case. Another speaker complained that building timber was carried from Liverpool to Lynn in Norfolk for a less price than to inland towns at half the distance. The whole outcome of the evidence laid before the Select Committee on Railways may be thus summed up. A strife is now being waged between the railway companies and the traders. The demand of the latter is that the former should be restricted to the powers, and held to the responsibilities, of carriers. The argument of one gentleman who addressed the meeting was, that by a thorough adoption of this policy, including the publication of vouched debtor and creditor accounts for *each branch of their trade separately*, the companies would largely increase their dividends. The arguments put forward on the part of the companies, on the other hand, point to nothing short of rendering their managers absolute masters of the trade of the country,—favouring those localities, or even those firms, in which they take an interest, at the expense of the community at large. The Report of the House of Commons Committee on the subject is expected to be signed about the 16th inst. Meantime, we call the attention of all architects and builders who are interested in the cheap and fair transport of building materials to the fact of the establishment of the Railway and Canal Traders' Association, the secretary of which dates his circulars from No. 9, Mincing-lane, E.C.

## ON A RECENT DECISION AS TO THE ADVANCE OF MONEY TO BUILDERS.

WHETHER builders borrow more than most other business men in order to carry out their contracts, may be a question not without interest, having regard to the effect which such a mode of obtaining funds for the completion of a contract may have on the way in which the work is done. No one, however, doubts that builders do carry on their operations very largely by means of funds borrowed on the security of partly-constructed buildings, or on that of sums payable in respect of the work on which they are engaged. We can, therefore, scarcely pass by without a brief notice the case of Lewis *v.* Hoare, 44 *Law Times* Reports, p. 66; 29 *Weekly Reporter*, p. 357, which was decided last year by the House of Lords. Indeed, seeing the high tribunal to which this case was carried, we should have noticed it earlier had it been reported in the Law or the *Law Journal* Reports. It is quite true that the decision turned on the construction of a particular document, and therefore involves no great legal principle, and is, doubtless, quite rightly omitted from the leading reports; still this does not prevent it any the more from being a case of considerable importance to the readers of this journal.

The facts of the case were by no means complicated; for it appeared that a builder named Thick agreed to erect six houses for a Mr. Lewis. There was in the agreement, as in most of these contracts, a proviso that the last instalment was to be paid within three days after the surveyor should have certified in writing that all the works had been fully completed to his satisfaction. Before the work was completed, Thick was in want of funds, and accordingly borrowed from one Hoare the sum of 110*l.*, and gave an authority in the usual form to his employer to pay the sum to Hoare on the completion of the contract. In addition to this document, Hoare obtained from Lewis a guarantee of the same date that in consideration of the advance, and of the above authority, he promised to pay the 110*l.* "on the completion of six houses in accordance with a contract dated the 28th of April, 1876, between myself and Mr. Thick." In process of time the houses were completed, but no certificate was ever given by Griffith according to the terms of the contract, as we may charitably hope, because the buildings were not completed to his satisfaction. Be that as it may, Mr. Lewis refused to pay the lender the sum which he advanced, on the ground that by the terms of the memorandum the money was not repayable unless this certificate had been given, because this was the meaning of the term in the memorandum which we have already set out. Now, of course, as we have said, no legal principle can be evolved out of this matter, but it shows that if a house-owner guarantees the repayment of money, and desires to make it repayable only on the completion of the building to the satisfaction of the architect or surveyor, he must say so distinctly, and in so many words. As the agreement was drawn up, it was, said the Lord Chancellor, "a definite promise to pay a sum certain on the completion of six houses in accordance with the contract entered into by the builder." And, again, Lord Blackburn says:—"He [the house-owner] does not make a promise to pay on the money due for the work becoming payable to Thick, or upon Griffith certifying that the houses were complete, but what he does stipulate for is payment on the completion of the houses in accordance with the contract." We confess that at first sight it might fairly be argued that the intention of the parties was that the whole contract was incorporated in the so-called guarantee; on the other hand, it must be remembered that at the trial the jury, after hearing evidence, found that the houses were completed before the action began. Into the rights or wrongs of the question of completion it would be useless for us to enter, the practical point which may usefully be learned from the case is the necessity for a house-owner who desires to guard himself against re-paying an advance for houses which the architect or surveyor would not pass, to make this a distinct condition of the promise or guarantee. To us it seems not only a very reasonable condition, but one which ought to form part of such promises; because a builder working on borrowed money may presumably be considered more likely to scamp his work than one with plenty of cash at his banker's, and because, in any case, it will be an additional incentive to the work being properly executed. It may be that advances would not be in such cases so easily obtained, but presuming that a surveyor would only withhold a certificate if he could honestly and properly do so, such a reluctance to advance money would be to the advantage of honest and thorough builders, and would act only to the detriment of those who do not execute their work in a proper and satisfactory manner.

**Sanitary Institute of Great Britain.**—In connexion with the Congress of this Institute at Newcastle-upon-Tyne, in September next, the following gentlemen have accepted the Presidentship of the various sections:—Mr Dennis Embleton, M.D., F.R.C.P., Section I. (Sanitary Science and Preventive Medicine); Mr. Henry Law, M. Inst. C.E., Section II. (Engineering and Sanitary Construction); Mr. Arthur Mitchell, M.A., M.D., F.R.S., LL.D. Section III. (Meteorology and Geology).

## ENGLISH AND GERMAN ROOFING SLATE.

LAST week the German Parliament rejected the proposal to place a heavy increase on the existing import duties on slates for roofing and other purposes, the majority against the proposal being very considerable. The matter is of some interest in England, as the proposed protective duties were aimed almost entirely at the imports of English slates. With the rejection of the proposed change, however, the hopes of not a few speculators connected with German slate quarries have been dashed to the ground. In the expectation, or rather full confidence, that the German Legislature would henceforth by protective duties exclude English slates from the German market, these acute promoters had drawn up schemes for the creation of a number of large German slate-quarrying companies. The existing slate-quarries in Germany were to have been sold at what was alleged to be an "alarming sacrifice" to the new concerns, although at the same time it was represented in other quarters that the purchase-money would really make the fortunes of the vendors. The projectors had laid their plans deeply. Petitions had been presented to the Imperial Parliament from the workmen in all the quarries, complaining of the miserable condition in which they were kept by English competition, and praying that the House would assent to the proposed protective duties. The promoters had further put themselves in communication with Prince Bismarck and other political personages, as well as with a number of wealthy capitalists, and everything was perfectly prepared for the realisation of their great financial schemes. In spite of the fact that the unsoundness of these speculations had been exposed by the *Cologne Gazette* and other papers, there is no doubt that the projected companies would have been floated, with consequences which it is only too easy to predict.

That this speculative business and the proposed prohibitive duties would have been of no benefit to Germany, and that if the scheme had succeeded, and the protective customs duties had been accepted instead of rejected by the Reichsrath last week, Germany would have had to pay very dearly for its whistle,—are facts only too clear to those who are acquainted with the comparative qualities of English and German slate. A German architect, in writing upon this subject, admits that, much as he desires the prosperity of his own country in general, and of the German slate-quarries in particular, it would be a piece of ridiculous folly to deny the great superiority of the English slates, or to prohibit their continued import into Germany. The writer in question says that, unfortunately for Germany, the slate quarries of that country are unable to produce anything to compete with English slates. The German material has natural defects which cannot be removed, disqualifying it for purposes for which the English slates are admirably fitted. Even in the very provinces where the German slate quarries are found, the German slates are beaten by the English. And this is not only on account of the greatly inferior quality of the native product, but also on account of its being actually dearer than the English. The quantities of roofing slate imported into Germany from France and Switzerland are quite inconsiderable compared with the imports from England. The reason of this is, firstly, that the French and Swiss slates, like the German, are inferior in quality to the English; and, secondly, that they have not the advantage enjoyed by the English of a cheap means of carriage by water. In fact, in North Germany, French slate is only employed for certain purposes, and that on account of its varied tints. It is, however, not unfrequently palmed off as English slate upon inexperienced purchasers in Germany. Moreover, the principal market for French and Swiss slate is Western and Southern Germany,—that is, those parts of the empire which are nearest to France and Switzerland, and, what is still more remarkable, the only parts of the empire where slate quarries are found. Though inferior to the English, the French and Swiss slates are superior to the German. German slate is, from its geological character, a material that is never of uniform homogeneous quality. It invariably splits in a coarse and irregular fashion. Hence it can only be used in thick and heavy tablets or slabs. Comparing the quantity of German slate required to roof a given area with the amount of English slate requisite for the same extent of

roof, we find the advantage is nearly in the proportion of three to one in favour of the English. The writer, to whom we have above referred, states that 50 lb. weight of English slates will cover 11 square feet of roof, while the weight of the German slates required for the same area is no less than 130 lb. This enormous difference in the weight of a German and English roof tells in favour of the English in more ways than one. First of all, there is three times the weight of material to be carried from the quarries to the spot where it is used. In great distances, therefore, the cost of carriage is much against the German. Secondly, the supports of the heavy German roofs, must, of course, be much stronger, and, therefore, more costly than the English. Besides this, the German slates themselves are so rough and irregular, and of such small size, that the preparation of the roof is much more costly in their case than in that of the English, where the laths can be wider apart. And after all, notwithstanding the greater expense, the German roof is rarely watertight. But even this does not represent all the disadvantages of the German slates. It is found in practice that roofs with German slates must be steeper than with English slates. Thus, to every 10 square feet of ground surface there must be 14 square feet of roof surface with German slates, where only 12 square feet of roof is necessary with English slates. This alone represents an additional advantage of 15¾ per cent. in favour of the English material. Finally, there is another disadvantage of the German slate. Whenever a roof requires to be repaired, it is necessary for the workman to avoid stepping on the German slates. He must always rest on a ladder placed upon them; while upon a good roof of English slates he can move with tolerable freedom. Altogether, therefore, it is not wonderful that the German Parliament should have refused a protective duty intended to drive English slates entirely out of the German markets; but the rejection of the higher duty would not have been secured unless the whole of the German master builders had been up and doing. When they found what they were threatened with, they bestirred themselves *en masse*. A monster petition, with the names of all the master builders and roofers in forty-four of the largest towns of Northern Germany was presented just in time to the Imperial Parliament, protesting against the prohibitive duty, exposing the misstatements of the German slate-quarry owners, and stating that English slates were absolutely indispensable. Numerous other petitions came from other parts of the empire to the same effect. One represented seventeen towns in Saxony; another, the merchants of Berlin; another, Saxon roofers; and so on. In short, it is seldom that the German building trades have been so agitated as within the past few weeks on this question of a protective duty on imported slates. The protest they raised was, however, so loud, unanimous, and strong that the Protectionists were defeated, and the Imperial Parliament refused the proposed increase in the tariff by a large majority.

## THE NORTHERN COAL TRADE.

IT was stated recently that the price of coal in the London market is now lower than it has been for many years; and yet concurrently with that low price there is a production of coal that is larger in total than has been previously known in this country. In the great coalfield of the North there is an unexampled production, and in that district there are specially interesting phases of the trade. The stimulus was given by the very great demand for crude iron for the United States, and it has been since contributed to by the activity in the shipbuilding industry, and in the iron trade in consequence of that activity. It is believed that there is at the present time a production of five million tons of coke in the South Durham coalfield,—chiefly for use in the smelting of iron. The export of coal is the highest that has been known, and the shipments to other home ports are also very large; whilst, finally, the general consumption locally has advanced with the revival of trade, and with the fuller circulation of money. But the production has increased fully as rapidly, and even more rapidly, than that of the demand, and hence prices are weak, and the profits of the coalowner are problematical. The supply is capable of being further increased, because in the era of a fierce demand some seven or eight years ago there were very great steps taken to enlarge the capacity of production, and these have now become available for drawing upon wherever needed. But as they are taken up there is a tendency towards increase of prices, and it may be that in the winter this will show itself. A low demand for coal is natural in summer, but it is certain that at the present time that known in the North is above that of the corresponding period in recent years, and it is fair to conclude that with the winter there will be an increase over the demand of last winter, when the consumption was sufficient to cause once or twice small increases in the price.

At the present time the coal trade of the North of England is supported in very great degree by the demand for manufacturing purposes, and that shows no signs of abatement, whilst the consumption for locomotives, for the gas manufacture, and for the supply of the mercantile navy, is growing yearly, so that it is fair to anticipate that there is a prospect of a continuous increase in the demand; and there is to be noticed a better use of the coal than there has been in the past. In the smelting of iron there are many changes being introduced, such as the use of larger heating-stoves, to raise the air to a higher temperature before it enters the blast-furnace, and thus to lessen the consumption of fuel. But whilst there is more economy known in the use of the coal, there is abundant room for much more, and especially in the large quantity that is consumed in our merchant navy,—only a comparatively small part of the power that is represented by the fuel being extracted and used when thus employed,—whilst the waste of coal in domestic use is general throughout the whole of the country. There is a constant increase in the consumption of coal in progress, and it is kept in check only in its rate by the economy that is introduced. That better use of coal needs to be increased and introduced into other branches of the consumption, and were it, as fully as it ought to be, there would be a continuation of cheap fuel and a prolongation of the duration of our coal-fields.

## ST. JOHN'S CHURCH, DRESDEN.

THE newly-formed community of St. John of Dresden had realised by the sale of property a a sum of 150,000 thalers (22,500*l.*), and owned, besides, a not very eligible site; but a satisfactory church had to be erected on it, and an architect was needed to solve the difficult problem. A young architect of Zwickau, Möckel by name, a disciple of Hase, of Hanover, came, viewed the site, considered the sum at disposal and what was expected to be done with it, and thought he could meet the requirements of the case. If it should be asked how he met it, it is sufficient to cite the opinion of men eminent in their profession, who say unanimously that Möckel has erected the most original modern church in Germany. The architect sent in his plan unsolicited, and, notwithstanding that he was an entirely unknown man, it found general favour at once with the church authorities; but in justice to the profession it was deemed necessary that a competition should be held. Two eminent architects were invited to prepare designs, and all three were submitted to a committee of well-known German architects. The judges unanimously selected that of Möckel. Oberbaurath von Schmidt, of Vienna, one of the committee, suggested several changes; but at the close of his report is found a remark which formed the best testimonial for the young architect. He says,—"Even should Möckel decline to accept any of the changes suggested by me, his church will be a well-considered, spirited, and beautiful work of art, to which I cannot refrain from giving my full approval."

The edifice was begun in 1875, and completed in 1878. It is pleasing externally, suited to its purpose, and imposing by sober earnestness in its interior. The ornamentation seems to grow out of the supporting masses; it does not appear added to it, as is seen only too frequently: it is an organic part of the building, and represents a natural growth of the structural elements, charming in its details. The tower, with its imposing vaulted hall, projects into the street, and thus nothing is lost of its full effect. It rises in pleasing proportions to belfries. Möckel has made use in the spire of an artifice common amongst Greek architects. They gave to the middle of their columns, as is well known, a soft outward swelling, probably to counteract a curious optical delusion, which frequently causes vertical lines to appear inclined inwards. The swelling, which is also applied in the spire of Freiburg Cathedral, heightens the statical feeling considerably, guards the spire from an over-pointed, meagre appearance, and gives it more force. The surfaces are animated; the numreous windows are well disposed; the perspectives are picturesque; and the whole is enlivened by the warm tone of the material used, Pirna sandstone.

A few words regarding the architect. Gotthilf Ludwig Möckel was born in 1838 at Zwickau, Saxony. His father was a coppersmith, and died early, without leaving property behind him. The son had soon to rely upon his own exertions, and, under great disadvantages, to push his way in the world in order to attain the object of his wishes,—that of following the profession of an architect. Möckel belongs to that class who are in the main self-educated, who have early to gain a livelihood, and it may be that from this circumstance arose the sharply pronounced individuality of his works. He is independent in every respect, an enthusiast in his views of architecture, and ever ready to defend them. He is now a busy man, and he numbers amongst his patrons princes, public bodies, and private persons alike. But it cannot be said that he has as yet had an opportunity of fully displaying his powers and originality. He has still to accomplish his *chef-d'œuvre*.

## CANTERBURY CATHEDRAL: VIEW IN CRYPT.

THE crypt or undercroft at Canterbury is reached by a descent from the Martyrdom, and is, as most of our readers know, one of the most interesting parts of the church. It is of greater extent and more lofty than any other in England. The extreme internal length is 230 ft. from the western to the eastern end, and its breadth at the transept is 130 ft. The crypt is cruciform in plan, and the principal part, 83 ft. 6 in. from wall to wall, is divided into a nave and aisles by lines of short massive pillars supporting low arches, upon the same plan and forming a support to the choir above. From the western extremity to the distance of 150 ft. eastward is the oldest part of the crypt, and its erection is ascribed to Archbishop Lanfranc. The illustration shows the eastern or later portion of the crypt, pointed arches being used, and the pillars varying in some degree from those more westward.

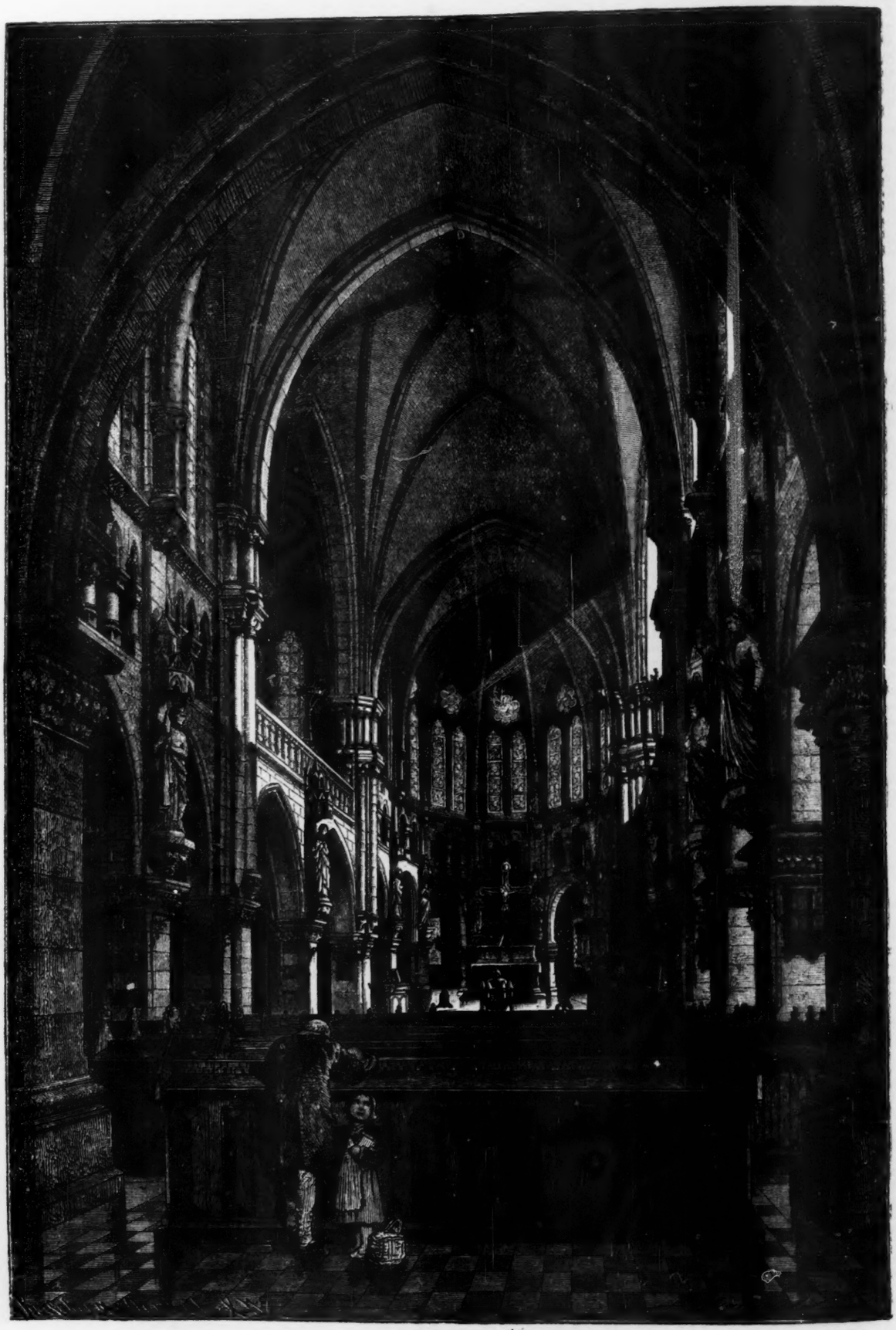
## PRESTON-NEXT-FAVERSHAM UNITED DISTRICT BOARD SCHOOLS.

THESE new schools, which are now just on the point of completion, have been erected to provide school accommodation for the joint parishes of Preston-next-Faversham, Davington, and Oare, whose population has during the last few years largely increased in consequence of the extensive development of the brick trade in the immediate neighbourhood. The accommodation provides for 500 children, and comprises separate schoolrooms for boys, girls, and infants, with suitable rooms in each case; basket and hat rooms, with arrangements for drying the wet clothing of children; lavatories, and two residences, the whole being planned with due regard to convenience in their use, and to the proper supervision by the master.

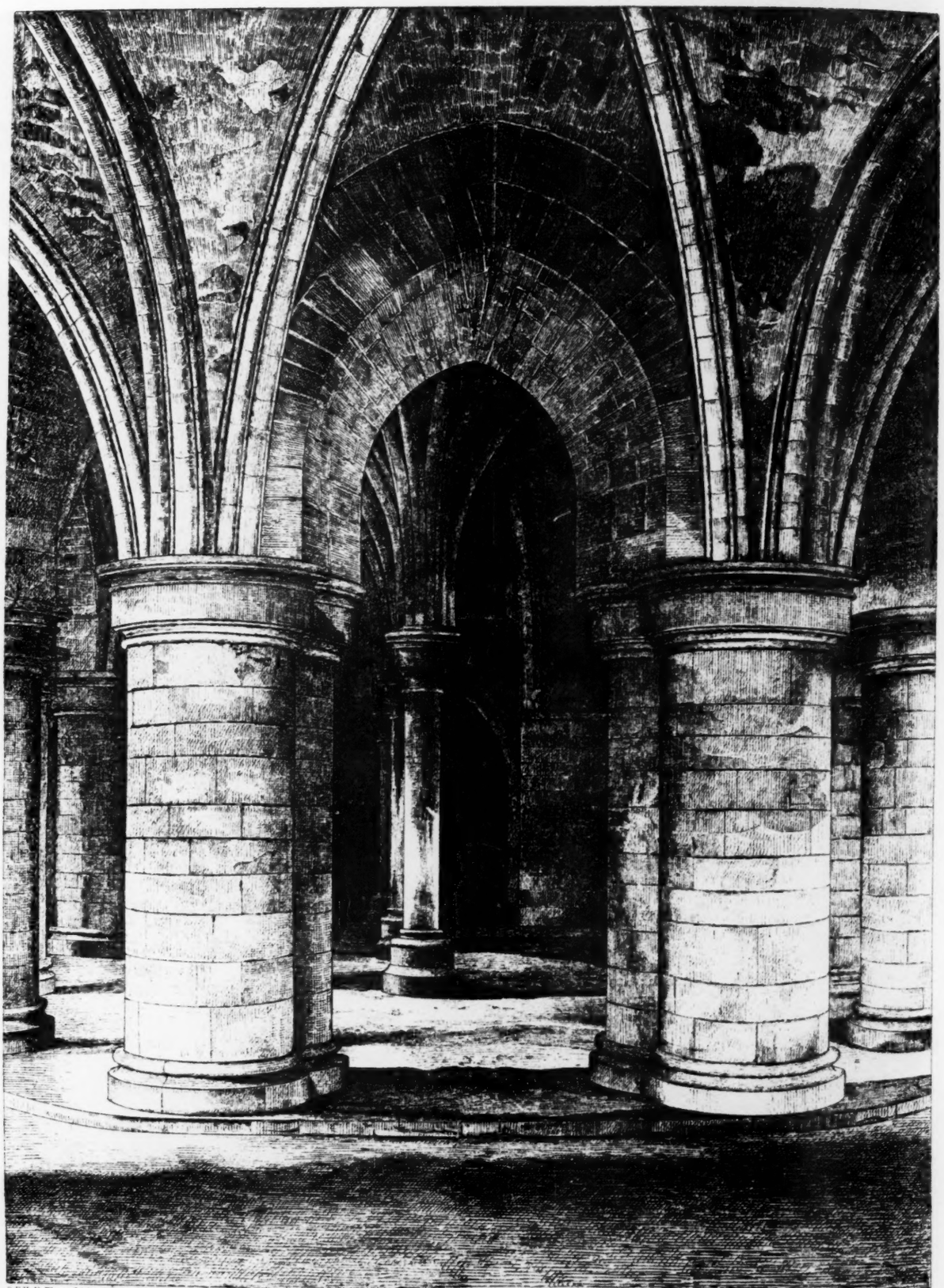
The material is grey stock bricks from the locality, relieved with red moulded brickwork. The roofs are covered with pressed tiles, in plain and ornamental courses, from the Aylesford Pottery Company, near Maidstone; and the works throughout have been designed with regard to economy consistent with sound and durable building.

Messrs. Whiting, builders, of Ospringe, near Faversham, are the contractors, and have carried out the works in a satisfactory manner under the directions of Mr. Benj. Adkins, of Faversham, the architect to the School Board.

**The Trustees of the Avenue Parade Chapel, Accrington**, have just accepted tenders for pulling down the chapel, and rebuilding the same from the designs, and under the inspection, of Messrs. Maxwell, Tuke, & Hurst, architects, Southport.



ST. JOHN'S CHURCH, DRESDEN.—HERR G. L. MÖCKEL, ARCHITECT.



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DRAWN BY ROBERT BRODIE MATHER.

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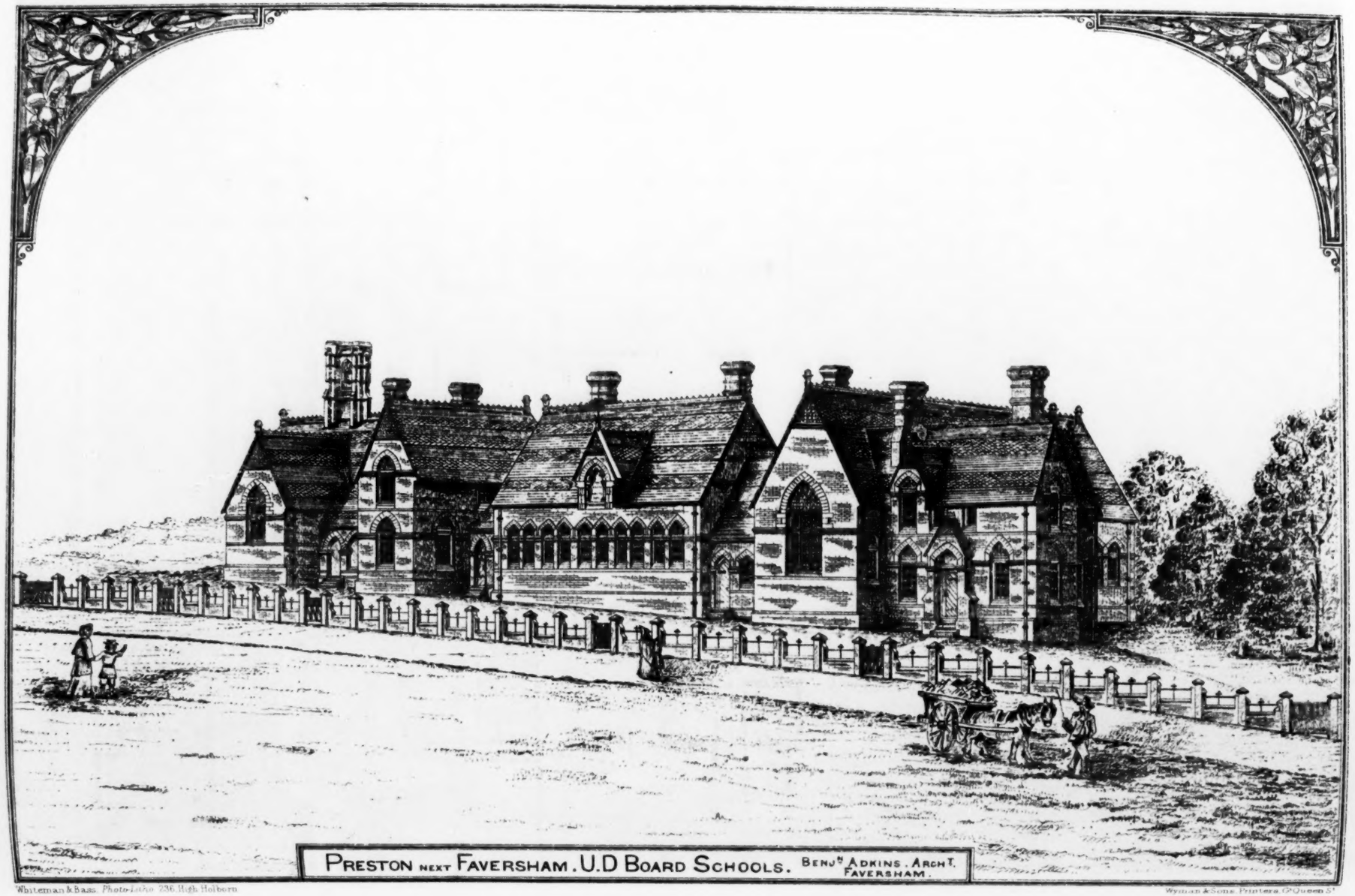
CANTERBURY · CATHEDRAL · VIEW · IN · CRYPT ·



PRESTON NEXT FAVERSHAM. U.D BOARD SCHOOLS. BENJ^N ADKINS. ARCH^T. FAVERSHAM.

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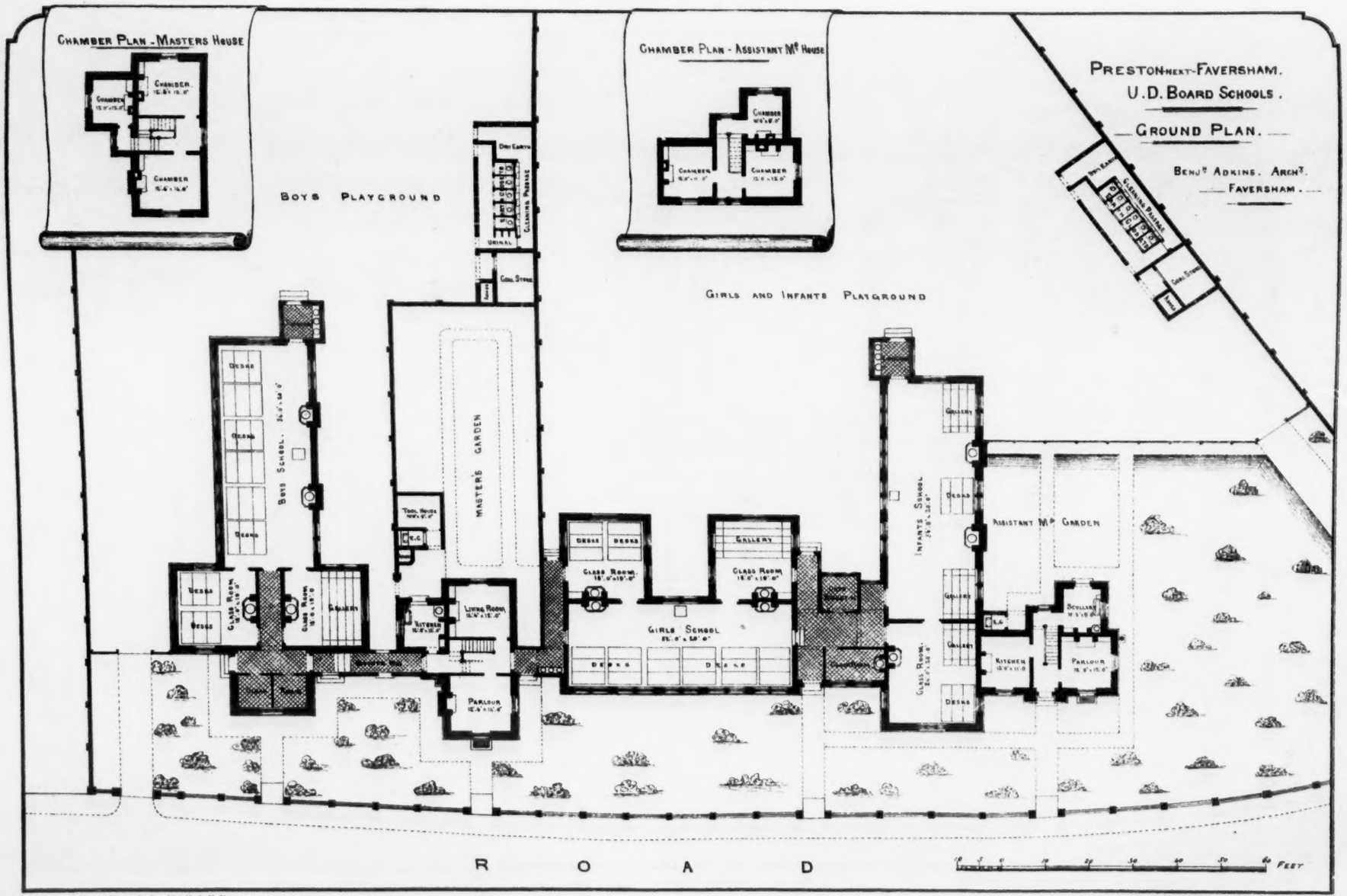


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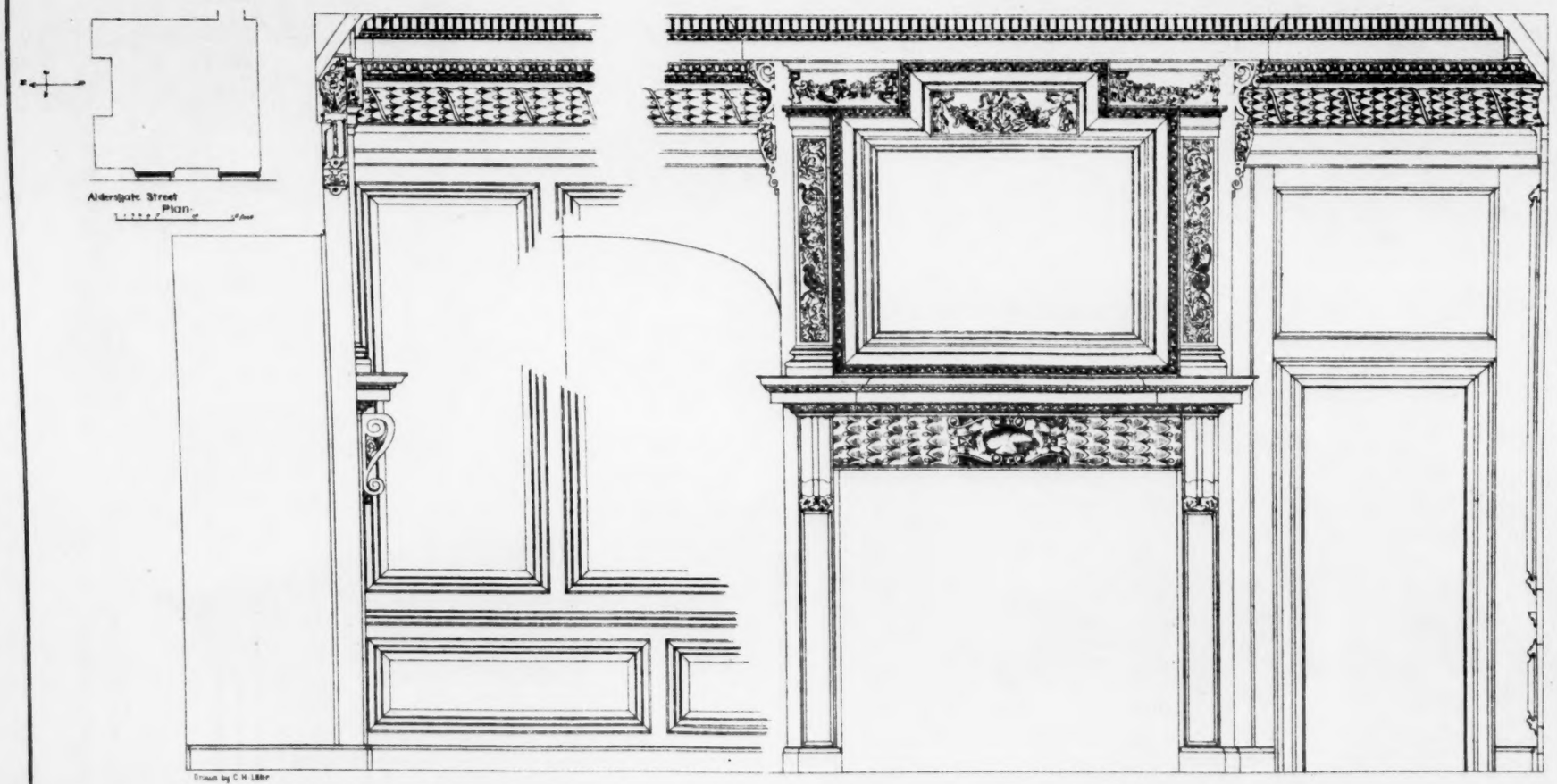
# Shaftesbury House · Aldersgate Street · E.C.

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A PANELLED ROOM: BY INIGO JONES.

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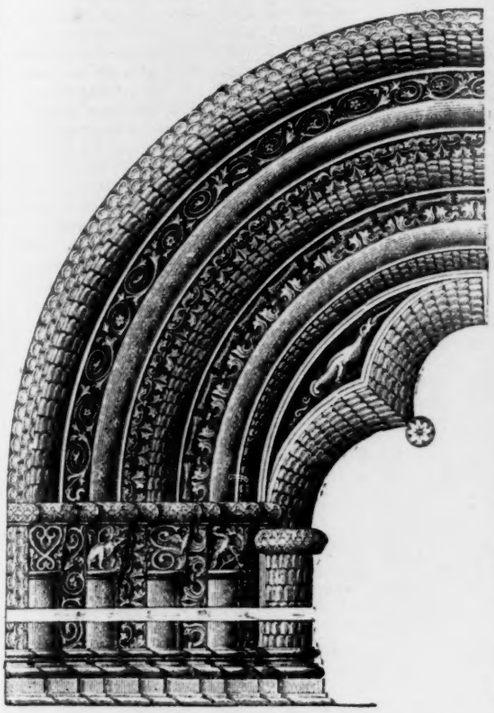


*Mouldings of Portal of St. James's Church, Koesfeld.*

*Apse of Basilica of St. Paul without the Walls, Rome.*

*Church of St. Sernin, Toulouse.*

*Byzantine Basket-work Capital from San Michele in Africisco, Ravenna.*

[See p. 730, *ante*.

## A PANELLED ROOM IN SHAFTESBURY HOUSE.

SHAFTESBURY HOUSE, originally Thanet House, on the east side of Aldersgate-street, was designed by Inigo Jones for the Tuftons, Earls of Thanet, whence it passed into the family of Anthony Ashley Cooper, Earl of Shaftesbury. In 1708 it returned to the Thanet family; in 1720 it became an inn; in 1734, a tavern; in 1750, a lying-in-hospital; and in 1849, a dispensary. The façade was of red bricks, decorated with eight pilasters of stone and carved Ionic caps.

Not long ago we gave a sketch of the exterior and an account of the building.

We are indebted to Mr. F. C. Penrose for a drawing he has had made of the wainscoting of a room in this building by Inigo Jones, which has just been pulled down, and have reproduced it in our present number.

It is understood that Inigo Jones's work will not be entirely lost, but the wainscoting and Ionic pilasters are to be re-erected in a gentleman's house in Devonshire.

## THE GROWTH OF AMERICAN CITIES.

THE enormous growth of the United States is a fact not only of general interest to the world at large, but it is a fact of more than ordinary importance to the architect and builder. The mere circumstance that the States are increasing their population at the rate of more than a million a year, and that there are a couple of hundred thousand families every year in want of new houses,—this is something, but not all. In the freshly-settled parts in the backwoods there is little or no occupation for architects at first. The settler runs up his log-cabin as best he may, and houses are more frequently of timber than of stone or brick. But the treasures in, on, and under the soil are so rich, and the industrious Americans accordingly grow wealthy so fast, that it is not long before there is a demand for brand new villas, houses, schools, churches, and workshops, all of more or less solid and ornate character. Indeed, without exception, the United States and the British colonies, especially in Australia, are the finest fields for architects and builders in existence, and as time goes on they will continue to offer increasing attractions to these professions. Between the present year and the year 1900, the States, which at this moment have a population of about fifty-three millions, will have increased their inhabitants in all probability to nearly ninety millions. Within the next eighteen years there will have to be built within the frontiers of the Republic ten million new houses for the additional population which will have sprung up or settled there. And this is independent of the enormous requirements of the older population in the way of dwelling-houses, and independent likewise of the public buildings, workshops, &c., the demand for which will increase in almost geometrical ratio every year for a long time to come. With such a field open before them, young architects who have no certain prospects in the old country have no occasion to despair.

One feature of the recent progress of the States is the rapid increase of its cities, both in number and size. In 1880 there were ten cities in the Union with more than 200,000 inhabitants each, twenty cities with more than 100,000, thirty-five with more than 50,000 and 100 with more than 20,000 inhabitants. Such a growth of cities and of urban population, the best of all fields and patrons of the builder and architect, has never been known in history before. And yet the next twenty years will see an incomparably greater growth than even this. The United States are not simply attracting every year more settlers from Europe, but every year their own natural increase of population is growing larger and larger. New York, with its belt of neighbouring cities, will, in another half-century, probably equal if not outnumber London itself. London within the Metropolitan Police District,—that is, the largest sense in which the name is applied,—has now approaching five millions of inhabitants. New York, with Brooklyn, Jersey City, Hoboken, &c., already has two millions. How the American cities have increased within the past ten years may be seen from the following figures:—New York increased its population from 942,292 in 1870 to 1,206,299 in 1880; Brooklyn, from 396,090 to 569,688; Philadelphia, from 674,022 to 847,170; Chicago, from 298,177 to 503,185; Boston, from 250,526 to 362,839; St. Louis, from 310,864 to 350,518; Baltimore, from 267,354 to 332,313; Cincinnati, from 216,329 to 255,139; San Francisco, from 149,473 to 233,959; and New Orleans, from 191,418 to 216,090. Out of the total population of the States, the number of persons living in cities or towns of more than 20,000 inhabitants, in 1870, amounted to no fewer than 8,010,614, or about one-sixth of all the inhabitants, and it is almost a certainty that the cities will increase twice as fast, and some of them will double and quadruple their size before the remaining eighteen years and a half of the nineteenth century have passed over our heads.

## THE BROMPTON HOSPITAL FOR CONSUMPTION.

ON Tuesday afternoon the Earl of Derby formally opened the new extension building of the Hospital for Consumption and Diseases of the Chest, Brompton.

This building, designed by the late Mr. T. H. Wyatt, and completed by his son Mr. Matthew Wyatt, has been constructed for 137 In-patients, and an extensive Out-patient Department. It is situated on the south of the Fulham-road, and connected with the parent hospital by a tunnel beneath the roadway. Built of red brick, with terra-cotta and Ancaster stone, it takes the form of the letter E, the two end wings looking south, the main body of the building facing north; it is 200 ft. long and 100 ft. high.

The basement contains compressed air and Turkish baths, rooms and stores for steward and housekeeper, &c.

The ground floor has a central entrance hall, flanked on the east by a large Out-patient department (19½ ft. high), and on the west by rooms for the resident staff, a mezzanine for the nurses, and a lecture-room.

The first, second, and third floors are devoted to In-patients; each floor consisting of a corridor (10 ft. in width) which runs round the north and east sides of the building, in the centre of which is a large dining-room, ten wards (13½ ft. high), holding from one to eight beds, forty-six in all; two nurses' rooms, slop sinks and lavatories, and two inhaling rooms. The average floor space per bed is 115 ft., the cubic space being 1,400 cubic feet.

The top floor contains the kitchen, with rooms for the night nurses and servants.

The ventilation is maintained independently of the windows and fire-places, and supplies 4,000 cubic feet of air per hour to each patient. The air is admitted by numerous openings placed on a level with different floors; on the east and north into the galleries, on the west and south into the wards, the greater portion being heated by passing over coils of hot-water pipe; part is admitted directly, the quantity of hot and cold air being modified at will, and the temperature capable of being evenly maintained. The foul air is drawn off from the corridors, wards, &c., through extracting flues built in the walls, and furnished with openings at floor and ceiling. These flues run into large air-ducts beneath the roof, which communicate with four towers heated by steam coils, forming the exhausting chambers.

The heating and ventilation have been carried out by Messrs. Haden & Son, of Trowbridge.

Lavatories (twelve) and baths (two) stand on the north of corridor by themselves; and the slop sinks (two on each floor) are situated in small annexes.

The flooring is constructed on Messrs. Fox & Barrett's fire-proof principle, and has a sub-floor of deal with teak above, which will be waxed.

There are two principal staircases of teak in the centre of the building, and two stone staircases in the wings.

Communication is maintained between the new and the old building by the telephone, and in the new building by electric bells and speaking tubes.

There are three hydraulic lifts: one for passengers, &c., two others smaller for food, &c., from the kitchen to the basement. These have been constructed by Messrs. Easton & Anderson.

Messrs. Higgs & Hill, South Lambeth, are the general contractors for the building.

In our volume for 1879 (pp. 1,291-95), we gave a view, description, and plans of the building.

## AWARDS, SMOKE ABATEMENT EXHIBITION.

THE following is a further list of awards made in connexion with this Exhibition:—

*Open Grates for Bituminous Coal.*—Brown & Green, underfed grate, gold medal; Clark, Bunnett, & Co., Ingram's grate, with Wallsend and anthracite, and E. H. Shorland, Manchester ventilating grate, silver medals. E. R. Holland, underfed grate, H. E. Hoole, radiating and reflecting grate, Feetham & Co., basket dog grate, J. M. Stanley, hopper-bottom fed grate, T. E. Parker, and Reeves & Henry, respirator grate, bronze medals. Doulton & Co., tile grate, Rosser & Russell, and G. Haller & Co., Kohlhofer hot-air stove, honourable mention.

*Open Grates for Smokeless Coal.*—Coalbrookdale Company, Kyrle grate, and Yates, Haywood, & Co., back and side draught ventilating grate, silver medals; M. Perret, bronze medal.

*Close Stoves for Bituminous Coal.*—C. B. Gregory, J. Cornforth, "Little Wonder," and R. W. Crosthwaite (with Gregory improvement), silver medals; J. F. Farwig & Co., and J. Dunnachie, bronze medals; Rev. H. J. Newcombe, honourable mention.

*Close Stoves for Smokeless Fuel.*—W. Barton, F. Lönholdt, Musgrave & Co., slow combustion, H. J. Piron, and H. Hunt, Crown Jewel, bronze medals.

*Kitcheners.*—T. J. Constantine ("Treasure" range), Eagle Range Company, Radiator Range Company, Brown & Green, and Falkirk Iron Company Dr. Siemens's principle), silver medals; Newton, Chambers, & Co. (Thorncliffe range), W. Stobbs (anthracite range), and M. Feetham & Co., bronze medals.

## THE GAS INSTITUTE.

THE 19th annual general meeting of the members of the Gas Institute was opened on Tuesday at the Institution of Civil Engineers, Great George-street, Westminster.

In his address, the president, Mr. George Wilson Stevenson, after reminding them of the alteration in their name, "The British Association of Gas Managers," said that the competition by light-producers for the custom of the public had never been so brisk and keen as it was at the present time. The electric light had come upon them, not as a novelty, but as a somewhat more practical competitor than formerly for the favour of the public. Candles and oil lamps had long had to yield the precedence to coal gas, both for efficiency and cheapness. The electric light would and must be further improved and cheapened, and it was just in the proportion that its promoters were successful im improving and cheapening it that it would become formidable as a competitor with gas for the lighting of our streets and dwellings. At present they had really nothing to fear from it, but its very presence among them ought to stir them up to maintain the supremacy they held. Referring to certain methods by which the supply of coal gas might be so cheapened and used as to accomplish this end, he observed that the first point was the improved carbonisation of coal. Within less than twenty years 8,000 ft. of gas sold from a ton of coal was considered excellent working, but it was now possible to sell from 9,000 ft. to 10,000 ft., or more, per ton of coal carbonised. Yet, notwithstanding their amended processes of condensing, scrubbing, purifying, and to some extent storing gas, nothing had been practically accomplished in the way of distilling coal by passing it continuously through a retort with a constantly closed entrance, and thereby getting a larger yield of gas per ton of coal, and a uniform make of gas per hour, both as regarded quantity and quality. Experiments, however, had been, and were being, made, with a view to bring to perfection an improved method of carbonisation on this principle. They could readily conceive what a different place the retort-house would be if the drawing and charging of retorts were abolished. Improved carbonisation, too, had a directly cheapening effect upon gas, and increase of business was another very important cheapening element. Local exhibitions displaying the best cooking and warming stoves, &c., and the best burners, would excite the curiosity and instruct the minds of the general public, and lead many to use gas for domestic and industrial purposes.

## LOCHLEVEN.

EDINBURGH ARCHITECTURAL ASSOCIATION.

THE members of this Association held their annual excursion on the 3rd, when a party of thirty visited Falkland and inspected the Palace, where Mr. Andrew Kerr, architect, gave an interesting description of the building.

The south or street side was first erected, and the east and north sides afterwards by James V., who reigned for a period of twenty-nine years. Sir James Hamilton, of Finnart, is usually named as the architect who designed and superintended the erection of the Palace. He was a natural son of the first Earl of Arran, cupbearer to James V., and superintendent of royal palaces. He was convicted of high treason and executed in 1540. After the death of James V. his widowed queen, Mary of Guise, often resided at Falkland Palace. Her daughter, Mary Queen of Scots, also made frequent visits to it during her troubled reign. James VI. seems to have made it almost a favourite residence, even when he was King of Great Britain. He made his last visit in 1617. Charles I. and II. also resided here for short periods up to 1651, when Charles II. paid his last visit. This interesting building and grounds have long since passed away from the Crown, and are now the property of Mr. O. Tyndall Bruce.

The excursionists then went on to *Lochleven*, a distance of about twelve miles, through a fine undulating country, diversified with large hedge-rows and clumps of trees. Passing through several old villages, many interesting features were observed upon the cottages, middle-class houses, churches, and town-halls, now fast wearing out. These were rendered still more pleasing by the small gardens interspersed with hawthorn, lilac, and rowan trees in blossom. The towers of the town-halls were generally square, terminating in a balustrade, and rather severe-looking plain stone spire. Upon one of the towers, instead of the usual clock, a bold corbel was projected, supporting a shaft and quaintly-formed dial. The plain crow-stepped gable and lofty chimney were prominent features upon the older domestic buildings, many of them being roofed with reeds, straw, tiles, and grey slate, presenting very effective groups in form and colour. On arriving at Lochleven, such of the party as could obtain boats visited the Castle Island, and surveyed the buildings there. The island had an area of about five acres, which was much increased when the water was lowered 4 ft. 6 in. in 1830. An ancient causeway below water extends from the island to the shore, but under the most favourable circumstances the communication is both difficult and dangerous. The original fortalice out of which Lochleven Castle sprang is said to have been built by Congal, the son of Dougart, king of the Picts. The present castle, now in ruins, with its courtyard, occupied a considerable portion of the island, the remainder having been laid out in garden and pleasure grounds. The great tower or keep stands in the north-west corner of the court, and is of a square form, four stories high, with walls 6 ft. thick, and corbelled bastions at three of the corners; it had also a timber roof and gables, which fell many years ago. The entrance is in the second story connected by an outside stair, and a small drawbridge at the top; when drawn up it formed the outside entrance-door. The door opens into the great hall, occupying the second flat of the building; within the doorway is a square opening into the vaults below, either for obtaining access or elevating supplies, or perhaps assailing hostile parties in the event of the lower vaults having been forced. The present lower doorway is recently introduced. The two upper floors appear from the markings upon the walls to have been divided into chambers of various sizes. The courtyard, surrounded by walls flanked with towers at the corners, contains a variety of buildings for domestic purposes, besides accommodation for a garrison and a chapel, the site of which is pointed out a little to the west of the keep. One of the towers at the south-east corner of the court-wall is said to have been the one in which Mary Queen of Scots was confined. No date can be assigned to this island fortress. The causeway already noticed, and occupation by the Picts, suggest its being of great antiquity; it was besieged in 1335 by the forces of Edward III., and defended for David II. of Scotland by Allen de Vispont. The besiegers raised a bulwark at the outlet from the loch, expecting to lay the castle under water, which certainly rose to such an extent as to encourage their hopes of success, but many of them having gone to Dunfermline to join in the celebration of the festival of St. Margaret, the besieged embraced the opportunity and broke the bulwark, allowing the pent-up waters to rush so furiously as to entirely overwhelm the English camp. But the castle derives its chief historical interest from Mary Queen of Scots having been confined here for about eleven months in 1568. Here she resigned her crown in favour of her infant son. The Earl of Northumberland was also confined here from 1569 to 1572, when he was surrendered to Queen Elizabeth, who condemned him to death. The fortalice and castle have evidently been subjected to many alterations and additions to meet the progressive defensive necessities of the several periods until about the close of the sixteenth century, when, from the improvements in artillery, even its isolated position became a matter of inconsiderable importance. Alphonse de Lamartine, in his "Life of Mary Stuart," describes the castle as being built of granite flanked by heavy towers, whereas it is constructed of the local freestone from Nivingstone, near the neighbouring village of Cleish. Although the details are scanty, there is sufficient to induce the architectural student to devote some time to their careful examination. The proprietor, Sir Graham Montgomery, manifests a deep interest in protecting these historical ruins; and Mr. Robert Burns Begg (grand-nephew of the poet), in whose charge they are placed, attends to their preservation in the words of his illustrious ancestor, even "wi' miser care."

## STONE SCREEN, ETON COLLEGE CHAPEL.

THE organ-screen executed by Mr. Earp, of Kennington-road, from the design of the late Mr. Street, has been opened. This screen, executed in Caen stone, is designed with a main central arch from west to east, richly groined, and supported by two semi-octagonal turrets: that in the north side containing the steps leading to the organ, and that on the south side having two air-tight chambers for conveying wind to the organ. These turrets are flanked by smaller arches abutting on to the walls of the chapel, and are also groined. The dimensions of the screen are 36 ft. in length, 20 ft. high, and 10 ft. from west to east. On the eastern arch is a corbelled balcony, finished with an open parapet of traceried oak.

## BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE closing meeting of the session was held on the 7th inst., the Rev. S. M. Mayhew, in the chair. It was announced that his Grace the Duke of Somerset had been elected president of the Association for the ensuing year, and that the annual Congress would commence at Plymouth on the 21st of August. Visits will be paid to Totness, Dartmouth, Berry Pomeroy, Tavistock, and other places of interest in the locality.

Mr. J. Gunn called attention to the mutilation, many years ago, of some of the piers supporting the central tower and spire of Norwich Cathedral, and made suggestions for their being strengthened; Mr. Earle Way exhibited a large number of Roman articles found in Southwark; Mr. C. D. Sherborn produced a representative collection of flint and stone implements from America and European countries; Mr. C. H. Compton described a fine collection of fictile objects, some from Athens, and many recently discovered in London, among which was a standing lamp of leather, formed evidently by compression in a mould; Mr. Loftus Brock, F.S.A., exhibited a series of Venetian beads, found in Aldgate; the chairman described a large number of beautiful objects which he produced, among which a jewelled cross and a silver cover to a Roman thurible were of great interest.

The first paper on "Cuddy's Cove, Northumberland," by Dr. Alfred C. Fryer, treated of a little-known natural cavern, the traditional place of abode of St. Cuthbert. Various references to Bede's History appeared to point to the locality, and to give ground to the tradition.

The second paper was by Dr. J. Stevens, on "Urn Burials at Basingstoke." During some recent building works two grave-like excavations in the chalk have been found, in which were various food-vessels and other vases of late British date. All appearance of interments, apart from these, had disappeared.

The third paper was by Mr. Walter Myers, F.S.A., on "A Roman Villa at Benizza, near Corfu." A fine building has been discovered, the plan of which was exhibited, and the arrangements, here in a very perfect state, throw light on similar buildings found in England in a more dilapidated condition.

The proceedings were brought to a close by remarks from the chairman on the success of the session now concluded.

## CROMWELL BRIDGE, SALFORD.

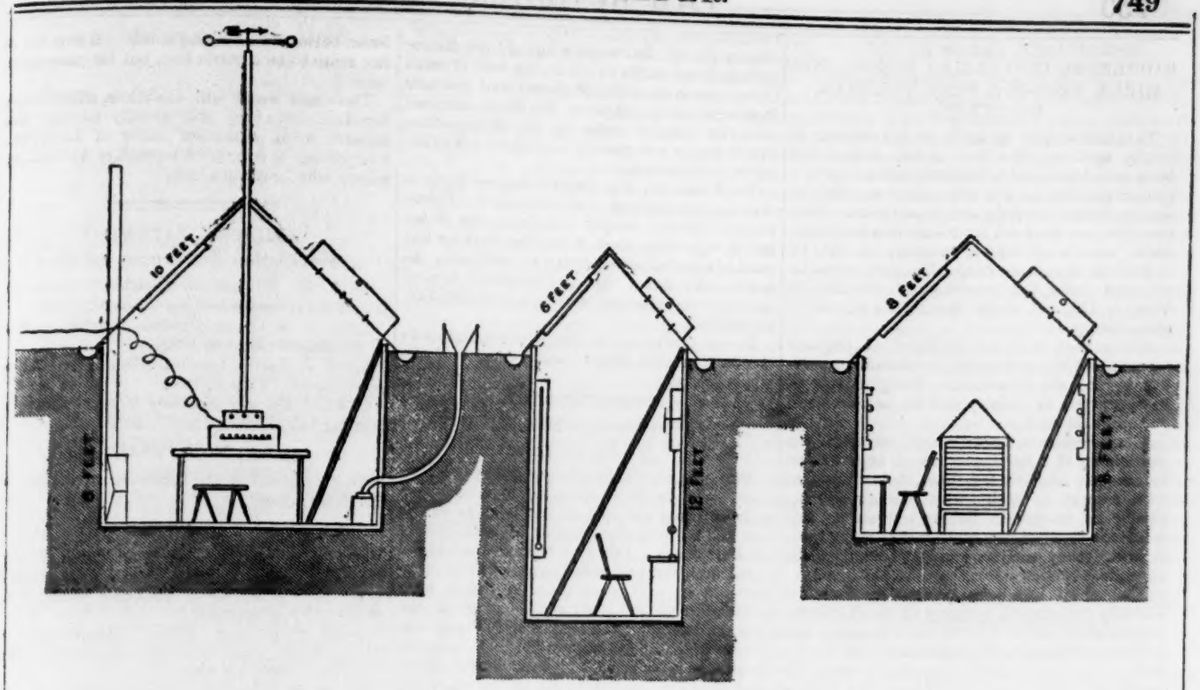
THIS new structure, which was opened on Saturday last by the Mayor of Salford, has been constructed by the Pendleton district, across the river Irwell, at a point opposite Great Cheetham-street, Lower Broughton. It has been built on the lattice-girder principle, is ornamental in design, and rests upon abutments of solid Yorkshire stone. It has a single span of 125 ft., having been made extra wide in order to allow of considerable improvement in the channel of the river, with the view of preventing floods in Broughton. The bridge has been erected at a cost of 10,600*l.* from designs by the borough engineer, Mr. Arthur Jacob, and the whole of the expenditure will be borne by the Pendleton district with the exception of a contribution of 500*l.* made by the trustees of the late Mr. J. P. Fitzgerald. The work has been carried out under the directions of the borough engineer by Messrs. Pilling & Co., contractors, Manchester.

Alderman Bowes, chairman of the Pendleton Highways Committee, in the course of some remarks made on the occasion, gave an interesting sketch of the recent development of Salford and Pendleton. Some seven or eight years ago, he said, the times were very prosperous in that district, and buildings were being rushed up in all directions. In Pendleton alone people were building at the rate of 800 houses per annum. Works were springing up in all directions, and from the Salford Station, for two miles out along the line of the canal and railway, there was not a site to be had for works. Landowners were selling their land indiscriminately, and builders were putting up streets in all directions, and it occurred to the Pendleton committee that, as they had a wide area, nearly as large as that of both Broughton and Salford put together, if ever they were to have any main and leading thoroughfares it was time to look after the matter. Just at that time the Salford Corporation were going for a new Act of Parliament, and certain leading thoroughfares, of which Cromwell-road was one, were laid out and embraced in that Bill. That bridge and road were intended to form a connecting link between Pendleton, Higher Broughton, Crumpsall, Cheetham, Prestwich, and Bury, and also to open out a large extent of land which would be valuable for building purposes, thereby increasing the rateable value of the district. The landowners met the committee in a fairly liberal spirit, for they gave the land for the formation of the roads, and 500*l.* towards the erection of the bridge, and when the land adjoining the road should be sold for building purposes the owners would repay the committee the cost of paving and sewering the road. It could not be doubted that had the committee waited some years it would have cost them ten times the amount of money to make the bridge. That was the nineteenth bridge that had been erected within the precincts of the borough, and he might safely say that for neatness of design and for adaptability to the purpose for which it was intended, it was surpassed by none. The Trafford Bridge, with a span of 116 ft., cost 29,600*l.*; the Wallness Bridge, with a span of 112 ft., cost 25,000*l.*; the Irwell Bridge, with a span of 116 ft., cost 23,000*l.*; and the Cromwell-road Bridge, with a span of 125 ft., had cost only 10,600*l.* The bridge was wide and high enough to take the largest flood that had ever occurred in the Irwell within the memory of man.

## CLEANING TILES.

SIR,—Will any one inform me of a good method of cleaning unglazed tiles? I find it impossible to have my hall (which has a good deal of pale yellow in it) kept clean by scrubbing alone.

M. BROWN.




MOUNTAIN WEATHER OBSERVATORIES.

## MOUNTAIN WEATHER OBSERVATORIES.

I BEG to send for consideration the inclosed scheme for the construction of shelter huts on mountain summits for meteorological observatories, such as Ben Nevis, &c. Where means are not obtainable to meet the expense and build regularly appointed towers, as in France, it is proposed by this scheme to sink pits in the soil or rock to station the instruments in, as a less costly and more accessible plan. The pits might be square or circular in shape, and lined throughout with concrete, projecting up above the top all round a little, so as to attach the roof to it.

On the top they would be covered by roofs of corrugated iron or flagstone as would be found best adapted, and they would be pyramidal or conical in shape. A window of strong glass could be let in on one side, and a door placed in on the other side.

A ladder would afford the means of descent into each pit, and a stove with chimney projecting through the roof, could be fitted in one pit, and it might be furnished with table and chair for the observer's convenience.

An electrical apparatus could be fitted up in one pit to pass information up and down between the observer on the top and the station or office situated at or near the base of the mountain.

An observer would be enabled to remain overnight sometimes, as there would be fire and furniture provided. The instruments could be attached to wooden frames and hung round the walls inside, or placed in the middle of the pits, as found most suitable for the objects of correct registration.

These shelter huts might be made quite water-tight, and would be impregnable to storms of snow or wind, and the roof might bear any amount of snow lying on them in winter without injury.

In order to admit of the outside air obtaining circulation through the interior of the pits when the doors and window were closed, fenestrated louvres could be placed on the summits of the pointed roofs, so as at the same time to exclude the rain entering.

The rain-gauge could be placed outside on the hill top, and its contents might be carried into a jar in one of the huts by means of a sunken pipe in the ground, and these registered.

The drainage of the roofs could be led off by means of gutters placed round each hut, and carried off by a ditch cut in the soil, and lined with concrete, down the hill side.

The accompanying rough section will further explain my idea.

W. J. BLACK, F.M.S.S.

## OBITUARY.

*Mr. John Scott Russell, C.E., F.R.S.*, died on the 8th inst., at Ventnor, Isle of Wight, in his seventy-fifth year. According to *Engineering*, he was the eldest son of the Rev. David Russell, a Scotch clergyman. He was born in the Vale of Clyde, in the year 1808, and was originally destined for the Church. His great predilection for mechanics and other natural sciences induced his father to allow him to enter a workshop to learn the handicraft of the profession of an engineer. He subsequently studied at the Universities of Edinburgh, St. Andrew's, and Glasgow, and graduated at the latter at the early age of sixteen. He had attained to such proficiency in the knowledge of the natural sciences that on the death of Sir John Leslie, Professor of Natural Philosophy in Edinburgh, in 1832, the young Scott Russell, though then only twenty-four years of age, was elected to fill the vacancy temporarily, pending the election of a permanent professor. About this time he commenced his researches into the nature of waves, with the view to improving the forms of vessels. His first paper on this subject was read before the British Association in 1835. The interest created by this paper was so great that a committee was appointed by the Association to carry on the experiments at their expense. Being employed at this time as manager at the large shipbuilding establishment at Greenock, now owned by Messrs. Caird & Co., he succeeded in having his system employed in the construction of the new fleet of the West India Royal Mail Company, and four of the largest and fastest of these vessels, — viz., the *Teviot*, the *Tay*, the *Clyde*, and the *Tweed*, were built, and designed by himself. In 1844 Mr. Scott Russell removed to London. In 1847 he was elected a Fellow of the Royal Society and member of the Institution of Civil Engineers, of which body he was for some time a vice-president. For a short time he acted as secretary of the Society of Arts, which place he resigned to become joint secretary with Sir Stafford Northcote of the Great Exhibition of 1851. He was, in fact, one of the three original promoters of the Exhibition, and under the direction of the late Prince Consort took a leading part in organising it. Mr. Scott Russell was for many years known as a shipbuilder on the Thames. The most important work he ever constructed was the *Great Eastern* steamship, which he contracted to build for a company, of which the late Mr. Brunel was the engineer. Mr. Scott Russell was one of the founders of the Institution of Naval Architects, and was one of its vice-presidents from the date of its constitution down to the day of his death. His greatest engineering work was, without doubt, the vast dome of the Vienna Exhibition of 1873. This dome is, among roofs, what the *Great Eastern* is to ships, its clear span of 360 ft. being by far the largest in the world. The last engineering work which Mr. Scott Russell ever designed was a high-level bridge to cross the Thames below London Bridge. It was intended to cross the river with a span of 1,000 ft., and to allow of a passage beneath it for the largest ships that could come up to that part of the river.

*Mr. Cecil G. Lawson.*—We record with regret the death of Mr. Cecil G. Lawson, the landscape painter, at the early age of 30. The interment will take place at Haslemere, Surrey, this Saturday, the 17th instant.

## ELECTRIC RAILWAY IN HOLLAND.

ON Friday last week the first electric railway in Holland was opened. The line goes from the bath Zandvoort, near Amsterdam, to a little park in the neighbourhood, called "Kostuerloren." The distance is only one kilomètre and a half; the rails are laid one mètre apart. The system used is that of Siemens & Halske, of Berlin. The line is worked by a steam-engine of fifteen horse-power. The wheels are attracted by the rails, but are turned round by another engine attached under the comfortable little carriage, which can accommodate twenty passengers. In four minutes the distance is done; there is hardly any motion perceptible in the carriage, even when the rapidity is the greatest.

**Association of Municipal and Sanitary Engineers and Surveyors.** — The annual meeting is to be held in London on the 29th and 30th June and 1st July next. The business on Thursday, June 29th, will include, 12 noon, annual meeting of members in Council-chamber of the Institution of Civil Engineers, and a paper and discussion: "Private Roads and the 152nd Section of the Public Health Act," by H. Oliver Smith, C.E., and the annual dinner at the Criterion Restaurant, Piccadilly. On June 30th, papers and discussion: "Gas as an Illuminating Agent compared with Electricity," by W. Sugg, Assoc. Inst. C.E. "Sanitary Legislation," by G. B. Jerram, Assoc. M. Inst. C.E. And the members will visit the headquarters of the London Fire Brigade, Southwark. On July 1st the members will visit Messrs. Doulton & Co.'s Pottery Works, Lambeth, the House of Commons—ventilating arrangements, &c., and the New Law Courts.

## MIDDLESEX INDUSTRIAL SCHOOL FOR GIRLS, BEDFONT, NEAR FELTHAM, MIDDLESEX.

THIS school is to be built on the cottage or family system. The first of two houses has been completed, and will contain fifteen girls, a proper number, as the committee consider, to secure efficient training and supervision. They consider, too, that not more than two buildings, each containing fifteen inmates, should be erected on the same site. The girls are to be received under the provisions of the 29 & 30 Vict., c. 118, and under the 14, 15, 16, and 17 clauses only.

The school is to be a Church of England school; and the girls are to be educated according to the six standards. Every girl is to be instructed in cookery and the several kinds of household work.

The committee consider that, although the assembling of a large number of boys in one building is adapted for them, it is otherwise with respect to girls, who, in their opinion, should be trained in houses containing only a limited number,—in houses similar to those in which they will be employed as domestic servants.

The school has been erected by donations liberally contributed by many of the Middlesex magistrates, and a few of their relations and friends, and to meet the many cases which come under their notice, and to provide a school for cases for which, in their opinion, the present certified schools are not adapted.

The building has been erected with special care with regard to light, air, and ventilation under Mr. Charles Barry, architect, and the works were carried out by Messrs. Perry & Co. There is a good garden, &c., and a very large building fitted up for recreation in all weathers.

## THE CAMBERWELL AND PECKHAM IMPROVEMENTS AND THE METROPOLITAN BOARD OF WORKS.

### GRAVE CHARGES.

ACCORDING to the proceedings at the Camberwell Vestry last week, the delay which has taken place in carrying out the street improvements in the locality has become a very serious matter for tradesmen and others residing in the neighbourhood. An indictment of a grave and serious nature is preferred against the Metropolitan Board, who are accused of culpable delay in carrying out the works, and also further charged with having improperly conducted the letting of the vacant land for building upon in the thoroughfares to be widened.

The General Purposes Committee recommended that a deputation from the Vestry should wait upon the Metropolitan Board and call their attention to the delay that was taking place in carrying out the works, more especially respecting the putting back the hoardings and making up the paths and roads, causing inconvenience, and in many instances ruin, to the tradesmen carrying on business in the line of route.

During the discussion which took place on the recommendation several members expressed themselves very warmly on the subject, the feeling of the Vestry being unanimous that the Metropolitan Board were blamable in the matter. Amongst the speakers was Mr. Middlemass, who observed that the delay had had a harrowing and ruinous effect upon the tradesmen who had the misfortune to carry on business in the vicinity of the cleared sites. Mr. Wesson added that he had heard statements on every hand from tradesmen with reference to the ruin this delay was creating, inasmuch as the market was gradually being removed from the main thoroughfares. Mr. Turney also observed that a large number of ratepayers would no doubt have a melancholy remembrance of the Camberwell and Peckham improvements. Mr. W. Lyon was of opinion that the Board had pulled down too much property at once, without making arrangements for rebuilding; and Mr. Lassam remarked that his chief complaint against the Metropolitan Board was with reference to the letting of the vacant land. The tendering was conducted by land-jobbers, to the detriment of others, who would be anxious to make a start with the building work. The price of the land was run up so high that he felt certain that no tradesman who commenced business in the new premises would be able to effect a profit upon his transactions for at least twenty years. Mr. Sugden thought the Metropolitan Board ought to put up the land in small plots, so as to prevent jobbers and land-grabbers from running up the price. Mr. Davis imagined that the mistake made by the Metropolitan Board was in not putting up the vacant building land to auction.

The Chairman, Mr. Dresser Rogers (who is the representative of the vestry at the Metropolitan Board), deeply regretted the delay which had taken place, remarking that he had tried his utmost at the Board to prevent it. He incidentally stated that the estimated cost of the improvements had increased from 238,000*l.* to 500,000*l.*

It was finally agreed that the deputation to the Metropolitan Board should consist of the whole vestry.

## THE LIVERPOOL OVERHEAD DOCK RAILWAY.

THE project of the Mersey Docks and Harbour Board for the construction of a high level railway along the line of docks at Liverpool has just received the sanction of both Houses of Parliament. The undertaking involves the construction of two railways, one of them being between six and seven miles in length, commencing near the northern boundary of the Board's estate, on the margin of the large new docks which were recently opened between Bootle and Waterloo, and terminating at the Herculaneum Dock, situated in the parish of Toxteth Park, at the south end of the city of Liverpool. The other railway, which is upwards of a furlong in length, commences by a junction with the first-named railway, at the south-east corner of the Nelson Dock, and terminates by again forming a junction with the same railway at a point close to the Clarence Dock. The line, although short, will be very costly, requiring a considerable amount of engineering, and the construction of several girder bridges or spans over the great thoroughfares leading from the central portion of the city and the adjoining borough of Bootle, to the margin of the river. In order that such communication with the river may not be interfered with, it is provided that the railway shall at six different points, in Bootle, be carried over carriage roads, on open spans of not less than 50 ft. in width each, and of a clear height of 15 ft. between the roadway and the under side of the girders of the bridges. There are likewise to be similar bridges over several of the main thoroughfares within Liverpool itself, including one opposite the end of St. James-street, which is a continuation, in the direction of the river, of Lord-street, the principal thoroughfare in the city. The bridge over this street is to be in two spans of not less than 60 ft. in width each. Other bridges of 50 ft. span each are likewise to be carried over Redcross-street, and above the open space across the Custom House and Revenue Buildings. Also one of three spans of 50 ft. width each, opposite Orford-street; and another of 60 ft. span opposite the north end of the Wapping Dock warehouses. The line will cross over the Lancashire and Yorkshire and the London and North-Western systems at several points, and in the Act there are clauses protecting the interests of these companies in respect of their various stations at the Alexandra Dock, the Canada Dock, the Waterloo Dock, and the Wapping Dock. The Railway is to be constructed as a double line throughout, and its estimated cost is 650,000*l.*, which the Dock Board have obtained powers to borrow, on the security of the dock rates. The maximum rates to be charged passengers is 3d. per mile for first-class, 2d. per mile second-class, and 1d. per mile third-class.

While the Bill was before the Committee of the House of Commons, Mr. Squarry, the solicitor to the Dock Board, stated, in reply to a question from Dr. Playfair, the chairman, that the Board had already borrowed the large sum of 14,000,000*l.*, but that they had still a very large margin for further borrowing. Mr. Squarry added that it was proposed to lease the line when completed, but the Lords' Committee had made it a condition that the Board should only lease it to a Company incorporated by Act of Parliament. He also observed that the railway was rather an exceptional undertaking, and not connected with any other railway system at all. It was an overhead line, running along the line of docks, the main object being to get quicker access than at present to the various docks between north and south. It was not in any sense to be a goods line, but for passengers only.

These new works will, doubtless, afford many facilities, but they will greatly damage the appearance of important parts of Liverpool. Everything is sacrificed nowadays to making money and "getting along."

## BUILDING PATENTS.*

### APPLICATIONS FOR LETTERS PATENT.

2,607. W. H. Lindsay, London. Construction of floorings for bridges. June 2, 1882.

2,614. C. E. Green, London. Domestic stoves or fireplaces. June 3, 1882.

2,656. J. Harris, London. Means for holding up windows. June 6, 1882.

2,662. J. Davies, Kearsley Moor. Kilns for burning bricks, &c. June 7, 1882.

### NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

*June* 6, 1882.

975. J. R. Nottingham, Washington, U.S.A. Compositions for the manufacture of artificial stone, &c. (Com. by A. Pelletier, Washington, U.S.A.) Feb. 28, 1882.

2,302. J. Mitchell, Paris. Manufacture of decorative transparencies for ornamenting windows, &c. May 16, 1882.

2,307. F. Versmann, New Charlton. Dry or earth closets. (Com. by H. Klencker, Brunswick, Germany.) May 17, 1882.

*June* 9, 1882.

2,216. T. C. Summers, Portsea. Supply of water to waterclosets, &c. May 11, 1882.

2,272. J. M. Hall, London. Stench-traps. May 15, 1882.

2,365. W. R. Lake, London. Construction of ceilings. (Com. by J. Budd, Boston, U.S.A.) May 19, 1882.

### ABRIDGMENTS OF SPECIFICATIONS.

*Published during the Week ending June* 10, 1882.

4,668. A. H. Hearington, London. Stoves for cooking and heating purposes.

These stoves are heated by gas, which is burnt in a compound burner consisting of an inner tube, into which the gas and air are admitted, outside of which is a concentric tube containing water, and passages are made passing through the water space into the place to be heated. Oct. 25, 1881. Price 6d.

4,707. J. H. Miles, Southampton. Window-sashes.

This is an improvement on Patent No. 4,623 of 1878, in dispensing with the weights, pulleys, and lines, and making the sash-frames fixtures, in which the glazed frames are pivoted. Oct. 27, 1881. Price 4d.

4,741. J. Thomas, Bangor. Chimneypieces.

These are made of metal plates, constructed in several parts, and enamelled and then built up. Oct. 29, 1881. Price 6d.

4,787. J. Dunnachie, Glenboig. Stoves or heaters for apartments.

These are made of fire-clay slabs, held together by a light iron framework. Inside the stove, above the fuel space, is a midfeather of fire-clay slabs, which extend from the lower part of the back upwards, in an inclined direction towards the front, over which the products of combustion have to pass, and then descend behind to the flue. Nov. 2, 1881. Price 6d.

4,795. G. W. Von Nawrocki, Berlin. Kilns for burning bricks, &c.

The heating-chambers are placed below the floor of the firing-chambers, and are connected both with the fireplaces and with the next preceding firing-chamber. (Com. by E. Arnold, Furstenwalde, Germany.) Nov. 2, 1881. Price 6d.

4,840. J. B. Spence, London, and E. Ormerod, Belvedere. Manufacture of concrete suitable for receiving an enamelled surface.

This concrete is made of Portland cement, iron or copper slag in powder, and hæmatite also in powder, which are all well mixed together. To this is then added crushed bricks, ballast, breeze, or pottery refuse, and the whole is mixed together with water. This concrete will stand the heat used in enamelling. Nov. 4, 1881. Price 4d.

4,845. J. H. Johnson, London. Apparatus for flushing or cleansing water-closets, &c.

A syphon is placed in the cistern, into which water is admitted very slowly through a small aperture, and the syphon empties the cistern periodically. (Com. by T. Guinier, Paris.) (*Pro. Pro.*) Nov. 4, 1881. Price 2d.

4,862. J. Harley, Glasgow. Astragals and sash-bars for carrying glass, &c.

A hollow tubular metal core carries a system of sheet lead glazing attached to it. The sheet lead forms the lining of the gutter and secures the glass. (*Pro. Pro.*) Nov. 7, 1881. Price 4d.

* Compiled by Hart & Co., Patent Agents, 28, New Bridge-street, E.C.

## VALUE OF LAND IN PARIS.

THE compensation paid for the houses Nos. 3, 3A, and 5, Rue Vivienne, Paris, which were required by the municipality for the enlargement and isolation of the National Library, amounted to 2,115,000f. (84,600*l.*). The two houses numbered 3 and 3A formed one house, used as a hotel,—the Hôtel des Étrangers; these were acquired by arrangement for 1,695,000f. (67,800*l.*). The area was 1,116 mètres, and the price paid per square mètre was 1,580f. (63*l.*), or 5*l.* 17*s.* 6*d.* per square foot,—an amount much less than that which is realised for land in the principal thoroughfares in the City of London.

The trade compensation amounted to 510,000f. (20,400*l.*), making a total of 2,205,000f. (88,200*l.*) for the two houses. A sum of 111,700*l.* has been already expended out of 152,000*l.*, which has been voted for this important improvement.

## STONE-WORKING MACHINERY.

STONE-WORKING machinery will be more used than it is. Messrs. Rotheroe, Sherwin, & Co., of King William-street, are making machinery for sawing, moulding, surfacing, and polishing stone, marble, and granite which will work its way into many yards. Their stone and marble sawing machines, with timber framing, are of various sizes, to take in blocks of stone or marble up to 10 ft. by 8 ft. by 6 ft. or larger, if required. Blocks are cut into any number of pieces, as may be wanted. The vibrating frame is strongly made, and provided with convenient means for setting the saw blades, the number of which will vary from one to twenty-eight.

The pendulum, giving motion to the vibrating frame, is arranged so that the latter can be worked through blocks of stone of considerable depth.

The rubbing bed or surfacing machine is one of the most useful that a stonemason can employ. The revolving top is made from a select mixture of cast-iron; the diameter varies from 7 ft. 6 in. to 14 ft., according to the requirements of the purchaser. The centre shaft is of best iron, and provided with all the necessary bearings, bushes, transverse blocks, steel rest, and journals complete, and fitted with simple and effective means for adjusting the table vertically and horizontally, bevel gear, driving pulleys, &c.

The stones, in their rough condition, are placed on the bed of this machine, and there receive a true and smooth surface, no matter how hard the stone may be. The saving effected by the use of this machine is great.

We must add a word for the improved machine for planing and moulding stone. This will make mouldings of any required design with accuracy of finish beyond that obtained by any hand labour. For steps, architraves, strings, cornices, and other straight mouldings, it seems an excellent machine. Many of the eminent builders in London have had these machines in use for some time, and the results obtained have exceeded their expectations.

## STAINED GLASS.

*Kingsbury.*—Two windows have been fixed during the past month in the south side of the chancel of Kingsbury Church. The first window contains the following subjects:—First light, Dorcas distributing the garments her hands had made to the poor; centre light, the distressed widows showing the garments (made by their benefactress) to St. Peter; third light, St. Peter presenting her (restored to life) to the rejoicing widows. The second window contains, as a central subject, Our Lord delivering Peter from a watery grave. The side lights contain figures of SS. Peter and Paul, to whom the church is dedicated. A third window, the gift of Mr. A. Coleman, is placed over the font, the subject being St. Christopher crossing the river, bearing our Lord, lighted by the torch of the hermit ferryman. The chancel also has been cleaned and coloured preparatory to decorating. The whole of the windows have been executed by Messrs. Camm Brothers, of Smethwick.

*West Newton Church.*— This church has recently been restored at the cost of H.R.H. The Prince of Wales, by Mr. A. W. Blomfield, M.A. Two stained-glass windows have recently been placed in the Church. One, illustrating the subjects of the Baptism of our Lord and the Passover, is the joint gift of their Royal Highnesses the Duke and Duchess of Connaught, the Prince and Princess Christian, and the Princess Louise and the Marquis of Lorne. In the other window, the gift of Mr. Christopher Sykes, M.P., is the subject of the Crucifixion. These windows were designed and executed by Messrs. Heaton, Butler, & Bayne, under the supervision of Mr. Blomfield.

*Wolverhampton.*— A small stained glass window has just been placed in St. James's Church, Horsley-fields, in the above-named town, in memory of the late Mr. Henry Rogers. The window has been provided out of the fund raised last year, and by the aid of which a window has already been placed in the church at Heath Town, and a portrait of the deceased gentleman hung upon a wall of the Board-room in the Wolverhampton and Staffordshire Hospital. The window that has just been placed in St. James's Church is the work of Mr. S. Evans, of West Smethwick, the same artist who supplied the window for the Heath Town Church. The subject illustrated on the window is that of Christ blessing little children.

## NEW PUBLIC BATHS FOR WIGAN.

ON Whit-Monday the Mayor of Wigan (Mr. Alderman Hopwood) opened the new public baths for the borough, which have been erected by the corporation on land in Millgate, adjoining the Free Public Library. To the late Mrs. Knowles, the wife of Mr. Thos. Knowles, M.P., must be given the credit for really investing the movement for establishing baths in Wigan with life and vitality, for it was owing to a promise by that lady to contribute 1,000*l.* towards such an institution that the matter was taken up by the corporation. In 1879 the council adopted the Public Baths and Washhouses Act, and the following year, under a Local Act, obtained powers to borrow 10,000*l.* for the erection of public baths in Wigan. The site having been selected, the plans of Mr. George Heaton, architect, Wigan, were adopted, and on the 27th of October last the foundation-stone was laid by the then mayor (Mr. W. J. Lamb), in the absence through ill-health of Mr. Knowles. Mr. Knowles's son on the completion of the ceremony handed over to the mayor a cheque from his father for 1,000*l.*, the amount promised during her lifetime by Mrs. Knowles. The building is a substantial structure of brick and stone. The gentlemen's first-class plunge-bath is 58 ft. by 22 ft., and the second-class male plunge-bath is 68 ft. by 26 ft. To the first-class plunge-bath there are twenty-two dressing-rooms, and to the second-class twenty-three. A special feature in the second-class bath is a spacious gallery running round three sides of the building, and there is also an additional bath for those who require a special wash before entering the principal one. There is a separate entrance to the ladies' department, which comprise a plunge-bath, 23 ft. by 16 ft., dressing-room, and usual fittings. Besides the ladies' and gentlemen's baths there is a laundry, 20 ft. by 14 ft., with airing or "sweetening" place on the flat roof; drying-room, boiler-house, manager's residence, &c. The whole of the engineers' work, heating arrangements, boilers, &c., were supplied by Messrs. Thomas Bradford & Co., who also supplied the laundry machinery. The contractor has been Mr. W. Winnard, of Wigan, and the total cost, including the site, will be about 8,000*l.*

## HOLYWELL.

THERE are some points about the holy well of St. Clement that do not seem quite clear.

You describe the ancient fountain as finding a course to the Thames. The stream would not, perhaps, be large, but may have served considerably to swell that body of water that has given name to Milford-lane, and which, in chief part, would naturally flow from the higher ground of Lincoln's Inn-fields, described as an original swamp. There is no river name found in the streets about here but Mill-ford, which was probably at the head of a creek that gave the Danish pirates access to their horse-shoe camp in St. Clement Danes, west of London and posted directly in a main line of road for Silchester, Salisbury, Bath, and South Wales.

A. H.

## LOCAL BOARD ARCHITECTS.

SIR,—I read a few lines on the above in your edition of the 3rd inst. I quite agree with the writer. I have been working up a practice for many years in a rough but thriving district, but since certain parts thereof have been put under Local Boards and part under rural sanitary authority, with their surveyors, or architects, or civil engineers, I find the business has been nearly destroyed, and no one appears to know who does the plans, &c. except that they are submitted, and, of course, passed.

The fact is, the surveyors, in some cases, are not to practise on their own account; but I know, from one of my own clients ("a brewer," who does not want to get a cross with the surveyor), that he obtained some of my work last year;—it was not much, certainly.

I do not see how it is to be remedied, either. Say that a man is appointed surveyor to a Board, and he stays two or three years or more. Well, he forms a connexion, and works very cheaply whilst under "Board pay," and for some cause he leaves them, and starts for himself; this being repeated at intervals. I find, perhaps, four or five architects, civil engineers, &c., floated in the district in which I have struggled so hard. Perhaps some one else may have experienced this.

ARCHITECT.

## LAW REFORMS.

*Public Legal Departments attached to every Civil and Criminal Court in the United Kingdom; Public Legal Advisers and Public Legal Professional Assistants affording to the Public Cheap, Sound, and Speedy Legal Assistance.*

SIR,—In face of the incomprehensible and even shameful state of our existing law and procedure, and the almost necessarily unlimited immunity, leave, and licence of, in fact, all classes of lawyers, Parliament, with adequate agitation, can hardly long refuse that legislation which should liberate and, so to speak, emancipate, the industrious classes of this country from this national feudal badge of legal servitude, and from the intolerable annual legal tribute and tax to justice, social peace and harmony, individual prosperity, and present and future security of property, nor refuse Parliamentary inquiry and reform in regard to the practice, procedure, legal usages, fees, and charges both of the barristers' chambers and of the solicitors' offices. In county courts, for instance, the county court registrars, whose duties are easy and light, and could well be performed by clerks, could, without expense to the country, fulfil the positions of public legal advisers, and public legal professional assistants. With the writer's well-known scheme of public defenders, the public would thus entirely avoid all compulsory recourse to the legal profession, and, further, would become wholly insensible to the hopeless obscurity and ruinous costliness of our existing law and practice.

AUGUSTUS T. HARVEY.

## JERRY BUILDERS AT WIMBLEDON.

THE Wimbledon Local Board have recently taken vigorous action with a view to putting a stop to the scandalous manner in which some builders have been carrying on their operations in that parish.

A builder recently commenced to build three shops, but the concrete under the footings was of such a wretched description, while the mortar in the walls was principally mud, that the Surveyor, Mr. W. Santo Crimp, served him with a notice to amend; this was disregarded, and the builder proceeded until he was peremptorily stopped from going on further. At that time the walls were as much as 4 in. out of perpendicular, and subsequent measurements showed that the walls were every day getting worse; the Surveyor therefore reported the buildings as being "dangerous structures," and action was taken by the Board under the 75th clause of the Towns Improvement Clauses Act, 1847, Mr. Robt. Walker, Surveyor, St. Martin's District, supporting the Board in their application at Wandsworth Police-court, for an order to "pull down." The order being granted, the Board, after the lapse of the specified time, razed the buildings to the ground.

It is hoped by vigorous action to stop the spoliation of one of the most lovely of the London suburbs by improper building.

**The Union of Benefices Bill.**—The Union of Benefices Bill was read a third time in the House of Lords on Tuesday evening and passed. We have already given a *résumé* of its provisions.

## NEW INFANT SCHOOLS, BANSTEAD-ROAD, SUTTON, SURREY.

THESE schools, the memorial stone of which was laid on the 6th inst., are now in course of erection on a finely-undulating piece of land, consisting of 20 acres, situate on the road from Sutton to Epsom, and close upon Banstead Downs. The buildings are intended to be supplementary to the South Metropolitan District Schools, which are situate nearly opposite to Belmont Station on the branch line of railway from Sutton to Epsom Downs. They will accommodate, including the officials, about 2,000 persons. The schools are of the industrial kind, and receive children from the workhouses of the Greenwich Union, St. Olave's Union, Stepney Union, Woolwich Union, and Camberwell Parish.

The managers of these schools, finding them insufficient to accommodate the increasing number of children, in the exercise of a wise discretion determined on the erection of new schools where the infants will be trained until they are of a sufficient age to be drafted into the schools already built there, to receive instruction in the ordinary rudiments of education, and be also taught some useful trades or occupations, so that they may be enabled to obtain their own living.

The land is surrounded with an oak park-pale fence, 7 ft. in height, having two entrance-gates opening on to the Banstead-road. Near the northern gate is situate the probationary ward, where the children are placed for a certain period previously to their admission to the Homes. These Homes are calculated to accommodate 500 children, in six separate blocks of buildings, with separate laundries and other offices, and the necessary nurses and attendants. The centre building, near the Banstead-road, is the administrative block, for the accommodation of those officials who have the general supervision of the whole establishment; at the rear of this block, and at the distance of about 100 yards, is placed the general hall, in which the children and officials will assemble for Divine worship, examinations, or entertainments. Beyond this, on a rising slope on the eastern side of a slight valley, are situate the infirmary block, and again a little to the rear of this will be placed the infectious ward.

It is intended that the whole of the sewage shall be utilised upon the agricultural portion of the land, which, being of a light description upon a subsoil of chalk, will take all the sewage that may possibly arise from the buildings.

The arrangements for laying the memorial-stone were made by Mr. B. J. Pyle, the manager of the contractors, and Mr. Wm. Lawrance, the clerk of the works.

The architect is Mr. Wm. Wallen, of College-street, and the contractors are Messrs. Kirk & Randall.

## THE METROPOLIS MANAGEMENT AND BUILDING ACTS AMENDMENT BILL.

### GATES AND BARS IN THE METROPOLIS.

THE House of Lords on Tuesday went into committee on the Metropolis Management and Building Acts Amendment Bill.

Clauses 1 to 5 were agreed to.

On Clause 6,

The Earl of Milltown complained that the Bill did not authorise the Board of Works to deal with the bars, gates, and other obstructions existing in certain parts of London, and especially in Pimlico and Bloomsbury, in which latter district they were peculiarly inconvenient. In Gordon-street, Euston-square, the notice affixed to the gate was to the effect that by permission of the Duke of Bedford, and during his Grace's pleasure, carriages and cabs might pass through within certain hours, but no wagons or other heavy vehicles were allowed without special permission. The date was July, 1835. Now that, he submitted, was not a notice that ought to be put up in a London street in the last quarter of the nineteenth century. Its terms gave one the idea that there was nothing to prevent the Duke of Bedford from closing the street altogether if he chose to do so. The restriction might have been right and proper originally, when the Bedford estate was on the outskirts of London, but now that a large part of the metropolis lay north of the New-road the bars and gates caused great inconvenience, and their maintenance was an extreme instance of the assertion of the rights of property. He moved an amendment giving the Board of Works power to remove these obstructions.

Lord Thurlow opposed the amendment on the ground that it involved a number of questions and opened the door to a great variety of claims which the Board was not at present prepared to consider. It was to be remembered that in the case of ordinary obstructions the Board had power to proceed by way of indictment. The object of the clause was to prevent any one who had opened a street with the consent of the Board from closing it again without their sanction.

The amendment was then withdrawn and the Bill passed through Committee.

## WASHABLE WALLS.

I SHALL be glad to know of some inexpensive washable decoration (not paper) for walls of institutions such as hospitals.

Is there any distemper which is really washable, or paint, which will not cost more than 6d. per yard, to cover on newly-prepared surface and is yet durable?

W. H. S. S.

## STARTING FORCE ON TRAMWAYS.

SIR,—Your recent article on "Steam Power or Electric Power for Tramways" contains the following remarks:—

"It is well known to be the fact that it is the strain of starting the cars that most tries the horses, and that, in fact, makes the horse-power so costly. We venture to anticipate that the most successful mode of tramway working, which at the present time is attainable, is the use of horse-traction, supplemented by a starting force to be supplied by an accumulator, which might also receive the force otherwise wasted in stopping."

It may surprise you to learn that exactly such an accumulator as you describe is an accomplished fact.

A few days ago I was present at a private trial of the experimental machine constructed by Messrs. S. Best & Co., engineers, 25, Hickman's Folly, Rotherhithe. For a first examination by independent practical men, generally so trying to new inventions, it was remarkably successful. No theoretical error was detected. Some trifling alteration in the arrangement of the details alone was suggested as necessary to make the accumulator a most efficient starter for tramway-cars from a state of rest.

The mechanism was fixed to full-sized car-frame (*i.e.*, having no body) for convenience of access. This frame had the usual tram-car wheels, axles, and bearings, and was built by Messrs. Starbuck & Co. It was set smartly in motion when the hydraulic accumulator (such is its name) was brought into play by a simple lever movement, bringing the car to a state of rest in from 10 ft. to 15 ft. by accumulating the momentum ordinarily dissipated by the friction-brake, and storing it up ready to be used for restarting.

On reversing the action of the lever, the machine is ready to propel the car onward, on opening a cock, requiring but a few pounds pull, which can be done either by the horses or by the driver, if he thinks them nervous, when an effective propulsive power of 1,500 to 2,500 lb. is developed, ample to set a fully-laden car in lively motion.

A peculiar feature of this apparatus is an hydraulic cylinder and oil reservoir, with an inlet opening valve, and an opening and shutting cock, whose action smoothly, yet effectually, checks the return of the accumulator springs, until required to be liberated on restarting the car.

The action is simple and effective, and as the machine gives out the same amount of propulsive force as was required to stop the car, minus friction, it is obvious that it is equally adapted for either light or heavy loads; it works from both ends of a car, and is equally effective in either direction. It is so easily controlled, that a child might stop or start a car. Its weight will be under 2 cwt. A case to protect the working parts from dust forms part of the arrangement.

I believe the machine will prove a great boon to tramway companies, as it will relieve the wear and tear of horse power equivalent to three to five miles per diem.

In its present form, fixed only to the frame of a car, it is only suitable for examination by professional men; but the inventor, an experienced tramway administrator, informs me that a number of accumulators are now being manufactured, so that in the course of two or three weeks we may expect to see them fairly tested on ordinary cars actually at work, carrying passengers on some of the London tramways.

WM. H. LE FEVRE, C.E.

## REVIEWS OF REVIEWS.

THE author of a book on "Joints," reviewed in our number for May 20, considers we have not presented a correct view of his work, and calls upon us to insert his own explanations. This we decline to do, and he threatens us with the terrors of the law. He must take his own course in this respect. It should be obvious that if we allowed every author, who thought his book had not been read with sufficient care by the reviewer, to supply what he considered deficiencies in the notice, we should have to further enlarge our journal without affording any great advantages to its readers.

## CHURCH-BUILDING NEWS.

*Port St. Mary* (*Isle of Man*).—The foundation stone of this church (of which we lately gave a short notice) was laid on the 15th ult., by Mrs. Gawne. The Lord Bishop of Sodor and Man was present, also the Rev. F. F. Tracy, M.A., the vicar, and many of the clergy of the island. The Vicar conducted the service, after which the Bishop gave an address. Messrs. T. D. Barry & Son, of Liverpool, are the architects.

*Millbrook*.—The new church at Millbrook, Hants, is now completed, and the spire, upwards of 150 ft. in height, can be plainly seen for many miles surmounted by a gilt cross and weather vane. The tower rises to a height of 60 ft., and is built of Swanage stone to correspond with the church. The walls are 4 ft. 3 in. thick, and are lined internally with hard red bricks from the Chandler's Ford yards of the contractor. The quoins, buttresses, and dressing to the ringers' loft, bell-loft, &c., are of red bed Farleigh Down stone from the celebrated quarries of Messrs. Randell, Saunders, & Co. In the bell-loft are fixed four massive English oak beams to carry the bells; these are supported upon heavy granite corbels. The spire is built of red Farleigh Down stone, also lined to a height of 25 ft. with bricks as before; above that height it is entirely built of Farleigh Down stone. The architect is Mr. Henry Woodyer, of Guildford. The contractor was Mr. John Crook, of Northam, Southampton, and the clerk of the works was Mr. Vennell.

*Bristol*.—The new Church of St. Saviour, Woolcott Park, Redland, was consecrated on the 30th ult. by the Bishop of Gloucester and Bristol. For some years the congregation have worshipped in an iron church, which stands upon a site adjacent to the spot where the new church is erected; but an effort was made some time since to raise funds to build a larger and more comfortable place of worship, and Mr. John Bevan, architect, Bristol, was commissioned to prepare plans for the new church. The contract of Messrs. Cowlin & Son was accepted to execute the work. Externally, at the west end, and springing from the gable, is a lofty bell-turret, with a canopied niche at the apex, containing a figure of our Lord as the Good Shepherd. The style adopted is Early French Gothic, of a massive type. The principal entrance is through a narthex at the west end. Upon the plan the church consists of nave, north and south aisles, organ-chamber, clergy and choir vestries on the north side, and on the south side a transept. From wall to wall the width of the nave, with north aisle, but exclusive of the south aisle, yet to be built, is 41 ft., and the length 93 ft.; from the floor to the apex of the roof, 58 ft. The chancel is 38 ft. long by 25 ft. wide, and 52 ft. high, having on the south side sedilie, piscina, and credence-table; and on the north side an aumbry or locker. The nave is divided from the aisles on either side by an arcade of six bays. The chancel arch is 20 ft. wide and 38 ft. high to the point of the arch. The nave and aisle roofs are open-timbered, plastered between the rafters; and the chancel and organ-chamber roofs boarded with moulded ribs dividing them into bays and panels. The whole of the roof timbers are left without stain or varnish upon them, with the hope (at no distant date) of their being stencilled with colour. Some of the windows are filled with cathedral glass, of pale tints, in geometrical pattern, by Mr. Ben Gay.

The heating of the church is by means of hot water, circulating at low pressure, this portion of the work having been carried out by Mr. Vincent Skinner. The carving, so far as it has gone, was executed by Mr. Sheppard, and reflects great credit upon him. The total cost will be about 5,000*l.*

*Gloucester.*—On the 1st inst. a vestry meeting of the parishioners of St. Michael's, Gloucester, was held to consider certain contemplated alterations in the chancel and other parts of the church. It was announced that a lady, who did not wish her name to be published at present, was desirous of erecting a memorial in the church to commemorate her father and mother, who were buried there. She expressed a desire to erect a reredos, and was prepared to contribute a sum not exceeding 1,000*l.* Mr. Waller, architect, had been consulted as to the proposal, and had made a report upon it, accompanied with drawings, which were handed round to the meeting. He recommended that, instead of the whole of the money being expended upon a reredos, a portion of it should be devoted to preparing the chancel to receive the costly and beautiful addition,—that the whole of the chancel and reredos should become the memorial to the family the lady wished to honour, in a similar way to that in which the Lady Chapel in the Cathedral had once been treated, and also the Marling Memorial Chapel; that the chancel be separated from the nave in the most emphatic manner, and be made the most important and distinct part of the edifice. This he proposed to effect by making the timbers of the roof of greater importance, and carrying down marble shafts; by boarding in the whole of the underside of the ceiling of the chancel, the ribs being moulded with floral bosses, and decorated with colour, or, if preferred, of different kinds of wood. He further proposed that a stone screen should be placed across the last arch of the chancel, and that the reredos should be made of white Caen stone, with figures of alabaster. The design suggested by Mr. Waller has, it appears, been greatly approved by the donor. It was resolved to apply for a faculty for the erection of the proposed reredos and sedilia in the chancel, and for other improvements, in accordance with the proposals submitted by Mr. Waller.

*Bletsoe* (*Bedfordshire*).—This church is being improved, under the care of the new rector. A new reredos is erected in the style of architecture of the chancel and other architectural features, such as the arches and decorated monuments adjoining. The reredos occupies the width of the chancel, the central portion being the width of the east window and divided into three compartments by marble columns, carved capitals, and moulded and sunk buttresses, finishing with carved pinnacles, &c. The central compartment contains a white alabaster cross and marble background, and on either side, in the other two niches, are figures of St. John and the Virgin Mary, the church being dedicated to St. Mary. These statues have canopied cusped tracery over, with carved gable crockets deeply moulded with a rich marble background, and supported by a corbled super-altar of marble. On either side of the central portion, forming the reredos proper, is an arcade of four arches with carved panels and moulded cusped arches supported on marble columns and carved capitals forming panels, containing the Commandments, Lord's Prayer, and Belief, cut and painted in red and black, giving a very good effect from the nave of the church. The whole of the work has been carried out by the instructions of the rector, the Honourable and Rev. E. T. St. John, by Mr. R. L. Boulton, ecclesiastical sculptor, Cheltenham.

*Bexley* (*Kent*).—A second new church for the parish of Bexley, Kent, was consecrated by the Archbishop of Canterbury on Saturday afternoon last. His Grace, accompanied by his Chaplain and Registrar, was received at the building by the Archdeacon of Maidstone, the rural dean, and clergy of the adjoining parishes. Among the distinguished company present were the Earl of Sydney, K.G., Lord Lieutenant of the County, Sir C. H. Mills, M.P. for the Western division of the county, and the Rev. H. Scott Holland, of Christ Church (Senior Proctor), representing the University of Oxford, besides a large number of resident gentlemen. The new building has been carried out by the contractors, Messrs. Naylar & Son, of Rochester, from the designs and under the superintendence of Mr. George Low, of 10, Basinghall-street, and is built of Kentish rag, with Bath stone dressings and tiled roofs, and consists of nave with north and south aisle, entrance porch, chancel and vestry; the tower and spire are not yet erected for want of funds, but it is hoped the Committee will soon be enabled to proceed with these and complete the building.

## DISSENTING CHURCH-BUILDING NEWS.

*Lower Norwood.*—On the 16th ult. the new Baptist Chapel, erected by Messrs. J. Smith & Sons, of South Norwood, from designs by Mr. Hampden W. Pratt, in the Gipsy-road, Lower Norwood, was formally opened. The building had to be adapted to a somewhat awkward site, which necessitated very careful planning in order to provide the accommodation required. Entering by two doorways on either side of the front, a descent of a few steps leads to a spacious room, which will be used for lectures and entertainments. It is provided with a platform, and is capable of seating 550 persons. The principal entrance to the chapel is approached by broad steps executed in "Granolithic," a substitute for stone, which has also been used for all the staircases in the building. The doors open on to a large vestibule, paved with tesselated tiles, and divided into a series of lobbies with swing doors, so as to exclude draughts as far as possible. The interior of the chapel has a bright and cheerful appearance, the windows being glazed with tinted glass, and the plaster on the walls finished a light red colour. The roof is open-timbered, and boarded in panels. The chapel has on three sides a gallery. The chapel is capable of accommodating about 740 persons. The preaching rostrum stands in an arched recess, lighted by a wheel-window, and there is a large circular-fronted lower platform, in which is placed the baptistery, made of enamelled white slate. In the rear are vestries for the pastor, deacons, and ladies respectively, and below there is a large class-room, also a kitchen provided with every convenience for tea-making purposes. The exterior of the building is executed in Kentish rag, with Bath stone dressings. The style adopted is Gothic of the Early English period. The cost of the building has been about 4,500*l.*

*Newcastle-on-Tyne.*—The new buildings for the Congregational church and school at Heaton form an important addition to the architectural features of the district, and, as they occupy a prominent site, with ample surrounding space, can be well seen. The style of architecture adopted is Early English, and the general arrangement of the interior is somewhat more ecclesiastical in its character than is usual in such buildings. All the congregation are seated upon the ground-floor, in nave and transepts, and the only gallery accommodation is a small end gallery for the choir. There are double transepts upon each side of the nave, divided from the latter by stone arches and columns. The windows are fitted with geometrical tracery and filled with cathedral glass in lead quarries. Behind the church is the school-room and vestry, with the usual adjuncts. The entire structure is carried out in stone, and the buildings are well heated and ventilated, the heating being effected by means of hot water, and vertical inlet tubes, or what is known as the "Tobin" system, being adopted for the latter. The total accommodation in the church is 520 sittings. The school-room measures 48 ft. 6 in. by 22 ft., and in addition there are vestry, heating-cellar, and other conveniences. The total cost has been about 2,200*l.*, or, including land, architect's commission, and paving and flagging, 2,900*l.* The architects were Messrs. Oliver & Leeson, of Newcastle.

*Dunfermline.*—The members of the Baptist Church in Dunfermline have decided to erect a new place of worship in Viewfield-place. Plans have been prepared by Mr. Henderson, architect, Edinburgh, and the style of architecture adopted is Gothic, of the twelfth or thirteenth century. Accommodation is to be provided for 600 people. The plan of the chapel is nearly a square of about 46 ft. inside, the side opposite the pulpit being semicircular, with four rows of raised seats all round. The gallery also follows this line. The roof is cruciform, finishing in four gables. A hall to hold 200 people is also to be erected. The estimated cost is 3,000*l.*

*Hamilton* (*N.B.*).—The new church erected for the Hamilton West Free Congregation, on the site of their former place of worship at the junction of Clydesdale-street and Burnbank-road, has just been opened by Principal Rainy, of Edinburgh. The new church is in the style of the fourteenth-century Gothic, cruciform in shape, with tower and spire about 100 ft. high, and seated for 650 persons. The architect is Mr. J. Hutchison, I.A., Glasgow, and the total cost is about 4,000*l.*

*Leicester.*—On the 30th ult. the ceremony of laying the foundation stone of the new Primitive Methodist Chapel in the Belgrave-gate was performed by the mayor (Alderman Chambers), Mr. A. McArthur, M.P., and thirteen of the friends of the chapel. The new chapel, of which Mr. A. Burgess is the architect, is to take the place of the Great George-street Chapel, which was built and opened in 1819, at a cost of 1,500*l.* Large schools were subsequently erected on a site adjoining the chapel at a cost of 1,277*l.* The site for the new chapel was purchased in 1881, and cost about 3,280*l.* About fifty yards fronting Navigation-street have been sold to the Corporation for the purpose of widening that narrow thoroughfare. The new chapel will be 79 ft. in length by 45 ft. in breadth, and will seat 900 adults. The school-room, consisting of a large hall and several class-rooms and vestries leading out of it, will hold 1,000 children. The contract for the building has been taken by Messrs. W. & A. Rudkin, at 4,754*l.* 14s. 2d.

*Ossett.*—The new Congregational Church here, of which the first stone has been laid, takes the place of the old chapel which was rebuilt about thirty years ago. The new building comprises six lofty class-rooms on the basement story, which is about on a level with the front road at the lowest corner, and over this story is the church, reached by three easy flights of steps in front, whilst it is entered on the level of the ground at the back, the road at the east side having a considerable incline. The church comprises nave, aisles, transepts, and choir, and is 93 ft. long, 50 ft. wide across nave, and 66 ft. wide across transepts, the aisles and transepts being divided from the nave by arcades of cast-iron pillars, carrying moulded wood arches; from the cornice over this arcade is a wagon-headed roof. The church will seat 1,008 adults, allowing 20 in. for each, in seats 2 ft. 9 in. wide, so that, with the usual proportion of children, about 1,200 persons can be accommodated if required. Externally, the architect has relied on grouping rather than on elaborate detail for the effect of the building. The front towards the street has a lofty gable rising to the height of 70 ft. above the level of the road. The principal flight of steps will hide the basement door, but at the top of the steps is a spacious doorway, with pillars having moulded bases and carved capitals supporting moulded arches; this centre doorway, which is in a projecting portal, is surmounted by a gable ornamented with carved crockets and finials, and over it are five lancet windows with shafts, carved caps, &c., comprised in a large and lofty arch occupying most of the gable. At the right-hand corner of the church is a tower, surmounted by a spire, rising to a height of 122 ft. from the level of the road. At the side of the tower, and also at the opposite corner of the front, are semi-octagonal projections, which contain the staircases. On the ground-floor stage of the tower, and on the opposite vestibule, are doorways corresponding with the central doorway, except that they are not surmounted by gables. The sides of the church are relieved by transepts, which project about 8 ft., and have double gables, which break the line of roof. The building will be faced with self-bedded or delf stone from Northowram, all the dressings being of best ashlar. The roofs are to be covered with dark Westmoreland slates. The warming is to be by hot water, and the ventilation by Boyle's air-pump ventilators. The building has been designed by Mr. J. P. Pritchett, architect, Darlington, and the work is being superintended by his son, who acts as clerk of works. The work is let to the following contractors:—Masons' work, Messrs. James Booth & Sons, Batley; slaters' work, Messrs. Pycock & Sons, Leeds; plasterer's work and painter's work, Mr. Henry Sanderson, Ossett; joiners' work, Messrs. Horsnell & Heald, Ossett; plumbers' work, Messrs. Hepworth & Spurr, Ossett; iron-founders' work, Messrs. Taylor & Parsons, Bradford; heating apparatus, Messrs. Weeks & Co., London. The total cost is about 5,500*l.*

*Sunderland.*—The new Congregational school-chapel, Chester-road, was opened on the 6th inst. This forms a portion of the scheme which has been previously referred to in our pages. Messrs. Hirst & Sons, the contractors, com-

menced operations on January 23rd, and the favourable weather which has been experienced has enabled them to finish the building (which has cost about 1,600*l.*) in a little over four months. The whole of the works have been carried out from the design and under the superintendence of Mr. H. T. Gradon, architect, Durham.

*Hollin.*—On Saturday, the 3rd inst., three memorial-stones were laid in a new chapel and school at Hollin, near Newchurch in (connexion with the Bacup Circuit of the United Methodist Free Churches). The architects are Messrs. Maxwell, Tuke, & Hurst, of Southport.

## SCHOOL-BUILDING NEWS.

*Bolton.*—In order to meet the spiritual wants of the large increase of population in the neighbourhood of Gaskell-street, Snowdon-street, and John Brown-street, Bolton, it has been decided that a new school and mission-room in connexion with the parish of St. George be forthwith erected, such school to be known as "The Neville Jones Jubilee Memorial School," the Rev. Neville Jones having attained the jubilee of his ministry in the church (being ordained in the year 1832), thirty-five years of this period being spent as vicar of St. George's parish. The cost of the school will be about 2,000*l.* The plans for the new school, which have been prepared by Mr. Morris, architect, Bolton, show a two-story building in the Gothic style. The ground-floor contains one large room to be used as a boys' Sunday school, 48 ft. by 28 ft.; and a class-room adjoining, 22 ft. by 17 ft. Proceeding up a wide staircase, a large room is entered 48 ft. by 28 ft. This will be used as a girls' Sunday school, and will have a class-room adjoining 22 ft. by 17 ft.

*Bristol.*—St. Agnes's School, Newfoundland-gardens, has been opened. It is Gothic in style, the exterior being of very pleasing design and well thought out. The materials of which it is constructed are local Pennant stone, the dressings being of freestone. The building is 40 ft. in height, and the main room measures 70 ft. by 30 ft. This apartment will seat 350 people, or, on occasion, even 400. There are two class-rooms for the various works proposed to be carried on, a soup-kitchen, lavatories, &c. The completed design contemplates the addition of another room about half the size of the large room, but the funds are not forthcoming. The architect is Mr. C. F. Hansom. Messrs. W. Cowlin & Son, of Bristol, were the builders. The structure, which has cost a little over 1,900*l.*, was in progress only five months, having been commenced in January last. Messrs. Tuckey & Son, plumbers, and Messrs. Jones & Hudson, gasfitters, were the sub-contractors; and Mr. J. Perrott filled the office of clerk of the works.

## VARIORUM.

The "Lectures on Art," delivered in support of the Society for Protection of Ancient Buildings, are about to be published by Macmillan & Co. The volume will include:—Regd. Stuart Poole, "Egyptian Tombs and the Future State;" Professor W. B. Richmond, "Monumental Painting;" E. J. Poynter, R.A., "Decorative Art;" J. T. Micklethwaite, "English Parish Churches;" and William Morris, "The History of Pattern Designing and the Lesser Arts of Life."

# Miscellanea.

**New Police Court, Bangor.**—In place of the old court, which has for many years stood in High-street, Bangor now possesses a police building suited to its requirements. The building, which is situated in the Garth-road, rather more than half a mile from the railway station, has been erected from the plans of Mr. John Thomas, the county surveyor. Mr. Evan Jones (Groeslon) was the contractor. The site is one exchanged by Lord Penrhyn, his lordship having contributed 150*l.* towards the extra cost of the building, which has cost 2,800*l.* The style is Domestic Gothic, the external materials being Penmaenmawr stone, with Ruabon dressings and roofing, and Penrhyn slates. The magistrates' court measures 41 ft. by 21 ft., and will be suitably fitted up by Messrs. Pierce & Williams, Carnarvon. The new building was formally opened on Tuesday last, the 13th inst.

**Harbour Improvements at Table Bay.**—The Table Bay Harbour improvements, commenced in 1860, appear to be among the most successful of the public works carried out by the colony. The productiveness of the colony has so increased in the last twelve years as to render the "calling trade" a matter of significance; and with the material progress of the country the commerce of the port has year by year steadily grown, until last year the tonnage of vessels entering Table Bay was four and a half times greater than it was in 1869. The gross revenue of the Harbour Commission is at the rate of 7,000*l.* per month, and of the total expenditure on the works, amounting in round numbers to one million sterling, more than half has been paid out of the earnings of the undertaking. Encouraged by their success, the Commissioners have carried out, at the expense of 130,000*l.*, a new graving dock, now finished, where steamers of 500 ft. long, of any tonnage up to 4,000 tons, and drawing 23 ft. of water, can be accommodated for the purposes of overhaul and repair. In consequence of the increase of shipping it has also lately been necessary to get the engineer-in-chief, Sir John Coode, to prepare plans for the further extension of the works. The breakwater is to be lengthened 1,800 ft., and arms are to be run out on either side inclosing a large area of deep water, which will form a new outer harbour.

**Lift, New County Hotel, Newcastle-on-Tyne.**—In this building, which is approaching completion, Messrs. Clark, Bunnett, & Co., of London, have just fitted up a hydraulic passenger lift. It is arranged to travel a distance of 60 ft., and the cage, or carriage, will contain three passengers, together with an attendant. Every contrivance to prevent accident has been adopted. In the event of the chain snapping, from any cause, by an ingenious arrangement the weight of the carriage will fall upon springs fixed at the top, which immediately spread out and catch into slots prepared in the guides. The doors of the case are also managed so that they will not open unless the carriage is opposite the landing. Communication is obtained with the attendant by means of electric bells, and at each landing there is an indicator showing where the carriage is. The arrangement for regulating the movement of the carriage is simple. There are placed inside the carriage three brass knobs, marked Nos. 1, 2, and 3, corresponding with the number of landings at which the carriage will stop. All the attendant has to do is to push in the knob containing the number corresponding with the landing at which he wants the carriage to stop.

**Dangerous Structures not "Nuisances."**—At the Wandsworth Police Court, on Tuesday, a Mr. Aubrey was summoned in respect of 26, 28, 30, and 32, Sleaford-street, Battersea, which were alleged to be in such a state as to be uninhabitable. Mr. Corsellis, Clerk of the Wandsworth Board of Works, attended to support the summons, and said that if the defendant would clear out the tenants and put the houses in repair an adjournment would be consented to. The defendant did not agree to that proposition, though he stated that the work was in hand. Mr. Pilditch, the Board's surveyor, gave a description of the houses. The floors, staircases, and plaster had given way, and there were props in the rear to prevent the back walls from falling out. Mr. Sheil wished to know what special nuisance was complained of. Mr. Corsellis said the houses were not weather tight. Mr. Sheil said he could not make an order, as the word "nuisance" was used in the Act. The summons should have been taken out for a dangerous structure. The summons was dismissed.

**The President of the Institute.**—Mr. Horace Jones entertained the Council of the Royal Institute of British Architects at dinner at Limmer's Hotel, Conduit-street, on Thursday, the 8th, and invited a number of eminent friends to meet them. The speeches were very few, but to the purpose. The President, in a few well-chosen sentences, proposed "Prosperity to the Institute," and the Right Hon. the Lord Mayor, Sir J. Whittaker Ellis, drank the health of the host, and spoke in complimentary terms of what he had done in the City, referring particularly to the improvements at the Guildhall and the design of the City Library. A very agreeable evening was spent.

**Notice of Removal.**—Messrs. Treggon & Co. (Limited), zinc and galvanised iron merchants, give notice of removal from their old warehouse, No. 23, Jewin-street, to more commodious premises at No. 19, in the same street.

**Value of Land in the City.**—On Wednesday, in the Lord Mayor's Court, an important compensation case was concluded. The plaintiff was Mr. Adrian Elias Hope, the owner of the premises Nos. 3, 4, and 5, Cloak-lane, City, who sought to recover £55,000 from the Metropolitan and Metropolitan District Railway Companies, who require the property under the compulsory powers of their Act for the completion of the Inner-circle scheme. Mr. Webster, Q.C., and Mr. Biron were counsel for the claimant; Mr. Matthews, Q.C., and Mr. Beresford for the defendant companies. On the part of the plaintiff evidence was given to show that in 1879 he purchased the property in question, as a matter of investment, for the sum of £45,000, his intention being to convert it into City offices, warehouses, and cellars of a first-class character. A great many surveyors and valuers of eminence were called who valued the property at £53,000. On the part of the defendants, it was suggested that the claimant had given a fancy price for the property in anticipation of its being required by the companies, but this was denied. Professional evidence, called on the part of the defendants, put the value of the property at £33,770. The jury ultimately returned a verdict for the claimant for £41,517.

**The Alleged Discovery of Organic Remains in Meteorites.**—It is asserted that Dr. D. Weinland has been able to verify the alleged discovery, announced a year ago by Dr. O. Hahn, of Berlin, of organic remains in meteorites (and upon which alleged discovery we commented at the time). Dr. Hahn's discovery (says the *Standard*), when first published, appeared so wildly improbable that, like many other important discoveries, it excited merely incredulous amusement, and dropped at once into the limbo of forgotten things. And yet Hahn's researches extended over no fewer than 600 specimens of meteorites of the Choadrite class in the museums of Tübingen and Vienna, all these meteorites having been proved to be genuine. In the body of these specimens he found a quantity of organic remains, principally belonging to the most ancient form of porous corallines, and including no fewer than fifty varieties of these creatures. Dr. Weinland has, we are now told, after a year's patient microscopic investigation, satisfied himself of the entire correctness of Dr. Hahn's observations.

**The Society of Arts' Conversazione.**—The South Kensington Museum was on Wednesday evening devoted to the annual *conversazione* of the Society of Arts. The North Court and Lord President's Court, with the galleries brilliantly illuminated with the electric light, furnished excellent promenades, where the visitors intermingled in opposing streams, where movement was possible, to the strains of the Hungarian band and the band of the 1st Life Guards. Various entertainments were provided for the guests, who were received in the Architectural Court by Sir Frederic Bramwell, Chairman of the Council. Nearly three thousand persons were present.

**The Royal Church at Kew.**—The Queen has promised a subscription of £100 towards the fund for the enlargement of the Royal Church at Kew. It is proposed to increase the accommodation to 737 sittings, and in every way to improve the church. The scheme has been unanimously approved at a public meeting of the inhabitants of Kew, presided over by the Duke of Cambridge, who has also subscribed £100. The subscription list further includes the names of the Duchess of Teck, and the Grand Duke and Duchess of Mecklenburg-Strelitz. The work, it is estimated, will cost £5,500.

**Kensington House.**—Messrs. Fuller, Horsey, Sons, & Cassell, of Billiter-square, have issued the catalogue of the valuable materials and fittings of this recently-erected mansion, which are to be sold by them, on the premises, on Tuesday next and following days. It is well worthy of perusal.

**Borough Surveyorship of Blackburn.**—We are asked to state that the "Nuttall of Bury," whose name has appeared as a candidate for the appointment, is not Mr. Thos. Nuttall, of Broad-street, Bury.

**St. Jude's, Chelsea.**—Considerable alterations in the parochial schools here have recently been carried out by Mr. William Balcombe, from the plans and under the superintendence of Mr. E. H. Lingen Barker, architect.

**Chokage of Drain-pipes by Roots of Trees.**—At the last meeting of the Royal Botanic Society, the donations towards the Society's collection included a curious specimen of elm root, completely filling and choking a drain-pipe. Several examples of the same kind of growth preserved in the society's museum were on the table, and the secretary said the choking of drains in the vicinity of trees was often caused by a simple root entering the drain between a joint in the pipes; it then branched and ramified into a vast number of fibres, matted together as a mass of oakum, and completely filled the pipe. This action was not confined to any particular variety of tree, and often occurred at a much greater distance from the tree than the roots were generally supposed to extend. If drain-pipes were laid so as to fit each other properly, and well cemented together, the roots of the trees would not so often find their way into the joints as they do.

**Enormous Cost of Water in the City.**—The *City Press*, commenting upon the decision of the Court of Queen's Bench, that water can be charged for only on the net rateable value of a house, points out that the annual gross value of property in the City is 4,169,000*l.* The rateable value is 3,531,000*l.*, being a difference of 638,000*l.* As the water-rate is four per cent. upon a house not exceeding 200*l.* annual rental, and three per cent. upon houses exceeding that value, the average may be taken at three and a half per cent., and three and a half per cent. upon 638,000*l.*, being over 22,000*l.*, that represents the annual saving to the citizens of London, if this just decision be carried out. Some thirty years ago, when the New River Company obtained their last Act of Parliament, they contracted under its provisions to supply the City with water at an average of three and a half per cent. on its then annual value, which was somewhat about 1,300,000*l.* The water-rent, therefore, at that time, exclusive of extra charges for extra accommodation, was about 45,000*l.* per annum. Years have rolled on, and men have ceased to reside in the City, but let out their houses in floors to others who also do not reside in the City. The consequence is that the consumption of water is largely diminished, but instead of the charge for it being therefore diminished, as would be the logical result of such a state of things, if change there was to be, the company, taking advantage of the mere letter of their Act, utterly regardless of its spirit, actually claim the right to increase their charge for a diminished supply from 45,000*l.* per annum to 146,000*l.*, that being three and a half per cent. on the present gross rental of the City.

**South Stockton Local Board.**—On the 6th inst. an ordinary meeting of the Board was held. The subject of erecting a suite of public offices suitable for the use of the various Boards of the district had been under the consideration of the Plans and Works Committee since the last meeting of the Board. The Surveyor (Mr. S. E. Thorold), in accordance with instructions, prepared sketch plans of a building such as he thought would meet the requirements indicated. The building was designed to cover the site belong to the Board in George-street, and was estimated to cost 4,000*l.*, which sum, the Surveyor pointed out, might be borrowed at four per cent., and its repayment spread over a period of fifty years. In the opinion of the Surveyor the offices might be expected to realise the following rentals:—Guardians' offices, 30*l.* per annum; Post-office, 40*l.*; Local Board, 35*l.*; School Board, 20*l.*; spare offices, 30*l.*; Fire Brigade, 18*l.*; and public hall, 50*l.*; making a total of 223*l.* per annum. As the requirement of the loan, with interest, over a period of fifty years would entail an annual payment of 206*l.* 4*s.* 2*d.*, the Surveyor thought the scheme was one that would commend itself to the consideration of the Board. The Plans and Works Committee, having had the plan before them, resolved that, in the first instance, it would be advisable for the surveyor to have an interview with the engineer of the Tees Conservancy Commissioners relative to the subject of accommodating the Commissioners in the proposed new offices.

**The Rowland Hill Statue,** in Cornhill, near the Royal Exchange, will be unveiled this Saturday evening, the 17th, by H.R.H. the Prince of Wales.

**The Council of the Over Darwen Corporation** have increased the salary of Mr. W. Stubbs, borough surveyor, from 275*l.* to 350*l.* per annum.

**New Municipal Buildings, Great Yarmouth.**—The hot-water heating-apparatus throughout the building, and the cooking-apparatus, hot-plates, steam-closets, &c., for the kitchens, were manufactured and supplied by Messrs. Barnard, Bishop, & Barnards.

## TENDERS

For alterations and additions at the Atwell Arms, Atwell-road, Peckham, for Messrs. Watney & Co. Mr. C. W. Bovis, architect:—

| | |
|---|---|
| J. B. Axford | £1,457 0 0 |
| Harradine | 1,342 0 0 |
| Smith | 1,197 0 0 |
| J. Anley | 1,170 0 0 |
| Hans Scharien | 1,145 0 0 |
| Spencer & Co. | 1,127 0 0 |

For detached villa residence, at Romford, for Mr. Joseph Smith. Mr. Joseph Harris, architect:—

| | |
|---|---|
| Harris & Wardrop, Limehouse | £1,694 0 0 |
| Davey, Romford | 1,680 0 0 |
| F. & F. J. Wood, Mile-end | 1,653 0 0 |
| Abraham, Romford | 1,600 0 0 |
| Staines & Son, Great Eastern-street | 1,572 0 0 |

For house at Dorking, for Mr. J. Clift. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove, Budgerow:—

| | |
|---|---|
| Lynn & Dudley | £1,358 0 0 |
| Heselgrove | 1,345 0 0 |
| Colls | 1,313 0 0 |
| Edsor | 1,289 0 0 |
| Goddard | 1,170 0 0 |
| Kilby | 1,097 0 0 |
| Hamblin | 1,070 0 0 |
| Putney | 1,005 0 0 |

For villa residence, near Bagshot. Messrs. T. Percy Harrison, Cooper, & Co., architects. Quantities by Mr. Edwin C. Pinks:—

| | |
|---|---|
| Smith & Son | £2,921 0 0 |
| Poole & Son | 2,800 0 0 |
| Watson | 2,683 0 0 |
| Allcock | 2,286 0 0 |

For the erection of mortuary-chapel, entrance-lodge, boundary-walls, railings, and gates, and for the formation of roads and sewers, St. George, Gloucestershire, for the Local Burial Board. Mr. W. H. Price, 3, Corn-street, Bristol, architect. Quantities supplied by the architect:—

| | |
|---|---|
| W. J. Summons, Bedminster | £3,500 0 0 |
| Eastabrook & Sons, Bristol | 3,175 0 0 |
| Saise & Sons, Bristol | 3,146 0 0 |
| R. J. Crocker, Bedminster | 2,785 0 0 |
| Hatherley Bros., Bristol | 2,672 0 0 |
| W. Cowlin & Sons, Bristol | 2,649 0 0 |
| Martin & Woodley, St. George | 2,634 0 0 |
| J. E. Davis, Bristol | 2,590 0 0 |
| Henry Beavan, Portishead | 2,496 0 0 |
| Wilkins & Sons, Bristol | 2,450 0 0 |
| Torse, Bristol | 2,420 0 0 |
| Caise, Fishponds | 2,115 0 0 |
| H. J. Rossiter,* Bedminster | 2,100 0 0 |
| G. C. Bennett, Portishead | 1,950 0 0 |

* Accepted.

For additions to Juniper Hall, Dorking, for Mr. G. Macandrew. Mr. Alfred R. Pite, architect. Quantities by Mr. J. Rookwood:—

| | |
|---|---|
| Cowland | £6,777 0 0 |
| Nightingale | 6,686 0 0 |
| Higgs & Hill | 6,680 0 0 |
| Larter & Son | 6,494 0 0 |
| Staines & Son | 6,374 0 0 |
| Tongue | 6,095 0 0 |
| Patman & Fotheringham | 5,973 0 0 |
| Falkner | 5,965 0 0 |
| Smith & Sons (accepted) | 5,687 0 0 |

For alterations to the Corn Exchange, Bishops Stortford. Messrs. T. Roger Smith & John Slater, joint architects, Mr. L. C. Riddett, surveyor:—

| | |
|---|---|
| Higgs & Hill | £3,874 0 0 |
| Priestley & Gurney | 3,630 0 0 |
| Glasscock & Son | 3,350 0 0 |

For the enlargement of Lyham-road Board School, for the London School Board. Mr. E. R. Robson, architect:—

| | |
|---|---|
| Jerrard | £5,044 0 0 |
| Tongue | 4,751 0 0 |
| Hunt | 4,733 0 0 |
| Nightingale | 4,689 0 0 |
| Downs | 4,621 0 0 |
| Higgs & Hill | 4,545 0 0 |
| Atherton & Latta | 4,500 0 0 |
| Stimpson & Co. | 4,383 0 0 |
| Reading | 4,260 0 0 |

For the erection of villa residence, West Dulwich, for Mr. Burton. Mr. J. T. Barker, architect:—
Joseph Higgs, Park-place, London (accepted).

For alterations and additions to 57, Paddington-street, for Mr. Seabrook. Mr. Hopkins, architect:—
Joseph Higgs, Upper Park-place, London (accepted).

For altering the gradients of Church-street, Woolwich, for the Local Board of Health:—

| | |
|---|---|
| C. Lovedale | £750 0 0 |
| Lonergan | 665 0 0 |
| J. H. Rinder | 397 0 0 |
| G. Rutty (accepted) | 297 0 0 |

For the erection of coach-house and stable buildings, at Holly Lodge, Highgate, for Mr. W. Burdett-Coutts. Mr. H. H. Bridgman, architect. Quantities by Mr. Frederick Thompson:—

| | Stable. | Fences, Drains, &c. | Total. |
|---|---|---|---|
| Southcott & Co. | £1,350 | £135 | £1,485 |
| J. Dixon | 1,285 | 175 | 1,460 |
| Richardson Bros. | 1,249 | 150 | 1,399 |
| Scrivener & Co. | 1,273 | 112 | 1,385 |
| Kirk & Randall | 1,127 | 118 | 1,245 |
| Wall Bros. | 1,118 | 119 | 1,237 |
| E. Toms | 1,067 | 102 | 1,169 |
| M. Manley* | 982 | 105 | 1,087 |

* Accepted, exclusive of Stable Fittings.

For cleaning and painting the following Board Schools, for the London School Board. Mr. E. R. Robson, architect:—

Buckingham-terrace, Notting-hill:—

| | |
|---|---|
| Petchy | £325 10 6 |
| W. Oldrey | 287 0 0 |
| C. Wall | 282 0 0 |
| Stimpson & Co. | 258 0 0 |

Middle-row, Kensal New Town:—

| | |
|---|---|
| Pardoe & Sons | £458 0 0 |
| W. Oldrey | 449 0 0 |
| W. Titmas | 442 0 0 |
| Stimpson & Co. | 426 0 0 |
| Smith & Son | 375 0 0 |

Whitfield-street, Tottenham-court-road:—

| | |
|---|---|
| Larter & Son | £399 0 0 |
| Petchy | 376 13 9 |
| Titmas | 320 0 0 |
| Stimpson & Co. | 244 0 0 |
| Derby | 217 0 0 |

For two new houses, and alterations to old premises, next the Town Bridge, Guildford. Messrs. Peak, Lunn, & Peak, architects. Quantities supplied:—

| | |
|---|---|
| Smith & Sons, Guildford | £1,800 0 0 |
| Garnett & Mills, Guildford | 1,769 0 0 |
| Pearce & Clark, Guildford | 1,762 0 0 |
| Mitchell Bros., Shalford | 1,756 10 7 |
| R. Pink, Milford | 1,756 0 0 |
| G. Strudwick, Guildford | 1,726 0 0 |
| Martin, Wells, & Co., Aldershott and London | 1,700 0 0 |
| R. Nye, Guildford | 1,698 0 0 |
| Goddard & Sons, Farnham | 1,595 0 0 |
| Harris, Woking | 1,545 0 0 |
| Elliott, Guildford (accepted) | 1,495 10 0 |

For new mortuary-chapel, caretaker's lodge, and boundary-walling, at the New Cemetery, Stoke-next-Guildford. Messrs. Peak, Lunn, & Peak, architects. Quantities supplied:—

| | |
|---|---|
| Mitchell Bros., Shalford | £1,959 10 11 |
| Martin, Wells, & Co., Aldershott and London | 1,839 0 0 |
| Pearce & Clark, Guildford | 1,739 0 0 |
| Garnett & Mills, Guildford | 1,735 0 0 |
| Woods, Weybridge | 1,725 0 0 |
| Strudwick, Guildford | 1,685 0 0 |
| Patrick, Guildford | 1,650 0 0 |
| Fowler, Woking | 1,625 0 0 |
| Pink, Milford (accepted) | 1,598 0 0 |
| Garland, Aldershott | 1,579 0 0 |
| Thos. Swayne, Guildford (withdrawn) | 1,340 10 0 |

For two new shop-fronts and other additions to premises, Friary-street, Guildford. Messrs. Peak, Lunn, & Peak, architects:—

| | |
|---|---|
| G. & R. Smith, Guildford | £587 0 7 |
| Pink, Milford | 562 10 0 |
| Burdett & Son, Guildford | 460 0 0 |
| Moon, Guildford | 448 0 0 |
| Strudwick, Guildford | 435 10 0 |
| Pearce & Clark, Guildford | 435 0 0 |
| Garnett & Mills, Guildford (accepted) | 430 0 0 |

For the erection of two new wings, at the Workhouse, Chelsea, for the Guardians of the Poor of St. Luke's, Chelsea. Messrs. A. & C. Harston, architects, 15, Leadenhall-street. Quantities supplied:—

| | |
|---|---|
| Scott | 12,240 0 0 |
| Bendon | 11,845 0 0 |
| Batstone | 11,743 0 0 |
| Garlick | 11,060 0 0 |
| W. Johnson | 10,975 14 0 |
| Priestley & Gurney | 10,899 0 0 |
| Wall | 10,687 0 0 |
| W. Holt | 10,550 0 0 |
| Mears | 10,487 0 0 |
| Downs | 10,475 0 0 |
| Thorn, Chelsea (accepted) | 10,000 0 0 |

For providing and fixing about 672 yards lineal of 12-in. by 4-in. hard York kerbing, and about 690 yards granite channelling, making up footpaths, &c., for the Roads Committee of the parish of Kew:—

| | Kerbing.* | Channelling.† | Footpaths.‡ |
|---|---|---|---|
| | s. d. | s. d. | £ s. |
| Knight | 5 0 | 16 0 | — |
| Wheeler | 3 3 | 7 0 | — |
| Sims | 8 6 | inclusive | 40 0 |
| Mowlem & Co. | 4 6 | 3 9 | 66 0 |
| Ford & Everett | 3 0 | 3 9 | 28 0 |
| Dorey | 3 0 | 3 6 | 48 10 |
| Tomes & Wimpey | 2 8 | 3 5 | 45 0 |
| Nowell & Robson | 3 0 | 2 6 | 40 0 |

* 12 by 4 York kerbing fixed, at per yard.
† Granite Channelling, 12-in. by 4-in. Three stones wide, on 4 in. of Portland cement concrete, at per yard.
‡ Making up footpaths and gravelling same.

For building six groynes and 1,000 ft. run of camp sheeting, on the foreshore of the Cliff Park Estate, Gorleston, near Great Yarmouth, for Mr. Thos. Kelsey. Mr. Fredk. C. Kettle, architect:—

| | In Memel. | Oak. | Pile Shoes. | Facing Cliff. |
|---|---|---|---|---|
| Hill & Co., London | £1,020 0 0 | £1,150 0 0 | £30 0 0 | £190 0 0 |
| Harrison, Brighton | 949 0 0 | 1,153 0 0 | 30 0 0 | 175 0 0 |
| Teasdel, Yarmouth | 852 11 0 | 1,158 5 0 | 51 16 0 | 322 5 0 |
| Bonnett & Saunders, Poplar | 771 16 0 | 1,233 19 6 | 72 0 0 | 233 6 8 |
| Cook, Bennett, & Shew, Spalding | 700 0 0 | 1,110 0 0 | 35 0 0 | 185 0 0 |
| Kaymer, Gorleston | 700 0 0 | 912 0 0 | 54 0 0 | included |
| Winser, Hastings | 698 0 0 | 1,160 0 0 | 44 per lb. | 170 0 0 |
| Walker, Lynn | 640 0 0 | 860 0 0 | 20 0 0 | 120 0 0 |
| Double, Southwold (accepted) | 495 15 0 | ... | 35 0 0 | 175 0 0 |

For additions to the Lewisham Union Workhouse. Mr. Henry S. Legg and Mr. H. Bonner, joint architects. Quantities by Mr. W. Farthing and Mr. E. Marsland:—

| | Main Building. | Engineering Works. | Casual Ward. |
|---|---|---|---|
| David Laing & Co. | £36,850 | £3,200 | £4,320 |
| Staines & Sons | 36,151 | 2,739 | 4,074 |
| Kirk & Randall | 35,863 | 2,908 | 3,922 |
| Holiday & Greenwood | 34,940 | 3,395 | 3,980 |
| Henry Hart | 35,120 | 3,005 | 3,912 |
| Crockett | 35,134 | 2,876 | 4,000 |
| Patman & Fotheringham | 34,834 | 3,010 | 3,900 |
| Mark Gentry | 34,000 | 3,228 | 3,920 |
| Higgs | 34,970 | 2,875 | 3,250 |
| Pickersgill Bros. | 33,759 | 3,186 | 3,704 |
| Edward Bentley | 33,907 | 2,486 | 3,925 |
| Shurmur | 33,993 | 2,340 | 3,645 |
| Longley | 33,664 | 2,436 | 3,800 |
| Higgs & Hill | 33,240 | 2,790 | 3,740 |
| Perry & Co. | 32,831 | 2,944 | 3,389 |
| W. & H. Croaker | 32,060 | 2,959 | 3,764 |
| Naylar | 32,645 | 2,650 | 3,488 |
| Chappell | 32,080 | 2,772 | 3,589 |
| Nightingale | 32,295 | 2,400 | 3,688 |
| Jerrard | 31,176 | 3,043 | 3,470 |
| Boyce | 31,493 | 2,500 | 3,600 |

For road-making and drainage works, Tankerville-road, Streatham Common Estate. Mr. R. Carter, surveyor, No. 11, Queen Victoria-street:—

| | |
|---|---|
| Barnes & Co. | £1,130 8 0! |
| Pound | 935 0 0 |
| Hawkings | 896 0 0 |
| Bentley | 892 6 0 |
| King | 850 0 0 |
| Wilkes & Co. | 848 0 0 |
| Truman | 820 0 0 |
| Pizzey | 793 18 0 |
| Colepeper | 768 0 0 |
| Pollard | 729 0 0 |
| Harris | 697 0 0 |
| Nicholls | 695 0 0 |
| Bloomfield | 672 0 0 |
| Hare | 615 0 0 |
| Huntley | 603 9 3 |
| Catley | 598 0 0 |
| Ibes | 597 0 0 |
| W. Thornett | 573 14 2 |
| Clarkson & Wilson (accepted) | 501 5 0! |

For painting, erection of pantry, and other works, at the Village Home, Banstead, for the Managers of the Kensington and Chelsea School District. Messrs. A. & C. Harston, architects, 15, Leadenhall-street:—

| | |
|---|---|
| H. Keal | £475 0 0 |
| W. Taylor | 450 0 0 |
| J. B. Potter | 438 0 0 |
| W. Crockett, Epsom (accepted) | 400 0 0 |

For reinstating fire damage, at Chalton-street, Somerstown. Mr. W. J. Miller, architect:—

| | |
|---|---|
| Jackson & Todd | £199 10 0 |
| Hart | 196 15 0 |
| Watson Bros. | 192 0 0 |
| Spencer & Co. | 185 0 0 |
| Adams | 181 0 0 |
| Norbury (accepted) | 180 0 0 |

For the erection of seven houses, Colfe-road, Forest-hill. Mr. James Webster, architect:—

| | |
|---|---|
| J. A. Olley (accepted) | £2,775 0 0 |

For the erection of a pair of shops and residences, in North-street, Wareham, for Mr. R. C. Hutchings. Mr. W. Walls Fookes, architect, Wareham:—

| | |
|---|---|
| Hobbs, Churchill, & Beer (accepted) | £850 10 0 |

For St. Mary Church Town-hall, St. Mary Church, Devon. Mr. Geo. S. Bridgman, architect, Torquay:—

| | |
|---|---|
| Eddles Bros., St. Mary Church | £2,964 10 0 |
| Bridgman, Paignton | 2,779 0 0 |
| McKellar, Torquay | 2,660 0 0 |
| Gibson, Exeter | 2,633 0 0 |
| Stacey & Rabbiel, Newton | 2,620 0 0 |
| Trevena, Plymouth | 2,591 0 0 |
| Matthews, St. Mary Church | 2,548 0 0 |
| Vanstone, Torquay | 2,548 0 0 |
| Goss, Torquay | 2,476 14 0 |
| Harris, St. Mary Church (accepted) | 2,226 0 0 |

For the carcass of a Baptist chapel, Paignton, Devon. Mr. Geo. S. Bridgman, architect, Torquay:—

| | |
|---|---|
| McKellar, Torquay | £450 0 0 |
| Peeke, Torquay | 440 0 0 |
| Bridgman, Paignton | 417 16 11 |
| W. King, Paignton | 394 0 0 |
| Webber, Paignton | 352 0 0 |
| King & Son, Paignton (accepted) | 348 0 0 |

For houses, St. Luke's, for Mr. Storey. Messrs. Wadmore & Baker, architects:—

| | |
|---|---|
| David King & Son | £5,230 0 0 |
| Merritt & Ashby | 5,151 0 0 |
| Larter | 5,050 0 0 |
| Grover | 4,589 0 0 |
| Sabey | 4,550 0 0 |
| Scrivener | 4,451 0 0 |
| Steel Bros. | 4,180 0 0 |

For the erection of warehouse, in Farringdon-street, for Messrs. Layton. Mr. G. Vickary, architect:—

| | |
|---|---|
| David King & Son | £3,800 0 0 |
| Conder | 3,597 0 0 |
| Killby | 3,576 0 0 |
| Colls & Son | 3,560 0 0 |
| Ashby Bros. | 3,477 0 0 |
| Lawrence | 3,473 0 0 |
| Nightingale | 3,356 0 0 |

For the erection of the Nicholson Institute buildings, at Leek, comprising free library, reading-room, museum, picture-galleries, and school of art. Messrs. Wm. Sugden & Son, architects, Leek. Quantities by the architects:—

| | |
|---|---|
| Collis, Longton | £10,681 0 0 |
| Lucas & Son, London | 9,971 0 0 |
| Massey & Son, Alderley Edge | 9,362 0 0 |
| Trow & Son, Wednesbury | 9,168 0 0 |
| Gabbutt, Liverpool | 9,000 0 0 |
| Gibson, Tunstall | 8,830 0 0 |
| Bradbury, Stoke-on-Trent | 8,800 0 0 |
| Bowden, Burslem | 8,743 0 0 |
| Warburton, Manchester | 8,700 0 0 |
| Inskips, Longton / Phillips, Leek (accepted) | 8,693 0 0 |

For additions to warehouse, Weston-street, Bermondsey. Mr. J. Gale, architect:—

| | |
|---|---|
| Shepherd | £1,400 0 0 |
| Cox | 1,230 0 0 |
| Priestley & Gurney | 1,125 0 0 |
| Croaker | 1,095 0 0 |

*Heating Apparatus, Forest of Dean Board Schools.*—In the lists of tenders for the construction of hot-water apparatus for the two sets of schools for the Forest of Dean U. D. School Board, the amounts 156*l.* 15s. and 161*l.* 15s., given under the name of "J. Fox, of London," in the first tender, and "J. Fox, of Finsbury-square," in the second, should be both under the name of "William J. Fox, of South-place, Finsbury."

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